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ABSTRACT

A segment of a study of the acquisition of English literacy among limited English speaking students in selected bilingual education programs examines student characteristics and program elements at one site, among native Cantonese-speaking children. The analysis focused on these issues: (1) the bilingual instructional practices that best foster the acquisition and development of school-related English language skills in bilingual students, and (2) the student factors (such as age at onset of extensive exposure to English or degree of bilingualism at program entry) that interact with instructional practices to affect acquisition of English language skills. The report begins with a description of the site and sample selection. A subsequent section on the measures used in the study outlines (1) the interactive reading assessment systems in English and Cantonese, (2) the informal writing inventory, (3) tests of formal language tasks (by student interview and passage retell), (4) standardized achievement test scores, (5) parent interview concerning student language background and exposure, and (6) measures of first- and second-language literacy training. The design of the research and analysis is also described. A final section presents a general analysis and the results of the analysis for each measure. Appendixes include the formal language assessment scales for the student interview and passage retell and the forms used for parent, student, and teacher interviews. (MSE)

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Preliminary Report

LANGUAGE AND LITERACY LEARNING IN BILINGUAL INSTRUCTION

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Cantonese Site Analytic Study

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Prepared by

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Southwest Educational Development Laboratory

September 30, 1982

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INTRODUCTION

The Language and Literacy Learning in Bilingual Instruction study contains four components. The first three consist of descriptive studies which examine the implementation of bilingual programs in three distinct language environments: Asian, Navajo, and Hispanic. The fourth component centers around an investigation conducted within the Asian site of certain student characteristics and certain bilingual instructional programs for Cantonese-speaking students as they effect resulting English literacy skills. This report provides a preliminary description of the data analyses conducted under the fourth component.

The general research questions of interest in the analytic study were:

> What bilingual instructional practices best foster the acquisition and developement of school-related langauge skills in the second language (English) of bilingual students?
>
> What student factors (e.g., age at onset of extensive exposure to English; degree of bilingualism at initial entry into program) interact with instructional practices to affect acquisition of English language skills?

In particular, for a small sample of upper elementary students in the Cantonese site, the effects of relative proficiency in English and Cantonese at the time of entry into school and amount of formal schooling in both English and Cantonese were evaluated for their effect on subsequent English literacy skills (reading, writing, and oral formal language).

To address these issues required a site which offered the needed variation in instructional programs and student characteristics, an instrument package that allowed the assessment of the literacy skills of the selected sample, and a design that permitted the separation of the factors of interest. In the following, report, each of these components will be detailed: the site and sample selection procedure, the derivation of the dependent and independent measures, the construction of the design, the data analyses conducted, and a discussion of the results of those analyses. It must be kept in mind that this report is only preliminary -- the data analyses have just been completed, and we have not yet had the time required to fully contemplate their interpretations.

Before continuing, the following conventions should be noted. Throughout this report, "L1" represents Cantonese, the home, or first language of most of the Cantonese site sample. "L2" represents English, the second language of the sample. Also, the site in which this study was conducted is refered to as the Cantonese site here, rather than the Asian site as used in the descriptive study, since only the Cantonese speakers were specifically the focus of this study.

SITE AND SAMPLE SELECTION

The Cantonese site provided a number of advantages for the type of retrospective study we were conducting. First, it offered a wider range of instructional programs than did the other sites included in the descriptive portions of the study. This was mainly due to the L1 literacy training program that this site's schools offered over a four year period and the large number of immigrants into these schools who provided an additional instructional contrast.

Further, the confounding of factors, especially that of program and linguistic resources, was much less within the Cantonese sample than within the samples that could have been drawn from the other sites. In the Cantonese site, students who spoke any Cantonese at all during the offering of the L1 literacy programs could enroll in them. In the Spanish site, placement within particular bilingual programs depended upon the classification of the student's language proficiency as determined by a standard test: English dominant students received one program, Spanish dominant students another, and bilingual students, a third program. Thus, program and linguistic resources were perfectly confounded there. In the Navajo site, there simply was no variation in preschool linguistic resources: almost without exception, the students were monolingual Navajo speakers when they arrived at school.

A third advantage of the Cantonese site, was that parental permission for student participation in the study was highest there. Finally, the Cantonese site school record system was the only one in our sites which was centrally located and computerized, thus making the collection of certain student record information not only easier, but also less expensive.

Identification of the Population

As noted above, the Cantonese site had a computerized record system, and in the Fall of 1980 a data tape was obtained from them listing all students who were currently enrolled in their school district who spoke any Cantonese at entry into the district. The listing for each such student consisted of (1) their yearly district school/grade assignment, (2) scores from all oral proficiency tests administered during their enrollment in the district (this was the basis for their inclusion on the data tape -- see the Asian site descriptive study report for additional information on the proficiency test used), and (3) the name, address, and telephone number of each parent. Since districts do not as a matter of course arrange student records in the format of longitudinal data sets, the effort required to create this tape was not trivial nor unappreciated.

From the listing of approximately 350 students, every school which included 10% or more of this population (6 schools), was identified so as to limit the number of schools to be visited for selection of target students and data collection. This set of students (a total of approximately 225 from grades 1, 3, 4, and 5) comprised the potential sample of target students. These particular grade levels were selected for two reasons. First, older students were more likely to have received some portions of the simultaneous L1+L2 literacy program offered in the late seventies. Second, younger students allowed an evaluation of the age on arrival issue (this analysis will appear in a later report).

Background Information on Students

In the next year, the Fall of 1981, the listing was updated to contain only those students who re-enrolled in the six selected schools (approximately 180). For each student, a complete yearly instructional program history was constructed based on language proficiency (as determined by the oral proficiency test used by the district), school attended, and year in school. Through interviews with administrators and reviews of district documents, we determined what programs were offered year by year, at which schools, and for which student classifications of language proficiency. Since program assignments were made by administrators based on language proficiency test scores and program availability, having the information above for each student, allowed an estimation of the instructional program a student should have received each year. Since the data tape contained some incomplete and incongruent information, the amount of L1 training, either in the district's simultaneous program or abroad, had to be estimated for some of the students (later to be updated for each selected target student through several sources -- see the Independent Measures section).

Target Student Selection

During the Fall of 1981, brief telephone interviews were conducted with one parent of each of the potential target students. Each was asked a number of questions about the student's language skill in English and Cantonese prior to his school entry in order to verify that the student had spoken some Cantonese at entry into school. At the same time, parental permission was requested to include the student in the study should he or she be selected.

Based upon the historical academic record constructed and the information obtained from parents, 158 students were finally selected for the study with approximately 40 students at each of four grade levels (grades 2, 4, 5, and 6). An inverse sampling method was used to achieve the most equitable distribution of students among the key contrasts in an effort to obtain a relatively orthogonal design structure (see the Design section below for details).

Between the time of initial sample selection and the completion of the student assessments, 12 students dropped from the sample, all due to their families moving from the Cantonese site area. The final sample thus consisted of 146 students: 34 second graders, 38 fourth graders, 37 fifth graders, and 37 sixth graders.

Overview of Key Variables

As mentioned above, the key variables of interest focused on certain student and program characteristics and their relation to resulting L2 literacy skills. The following is a brief introduction to the measures employed in this study, It is followed by a detailed account of their derivation.

The key student characteristic was language proficiency at entry into school. The oral proficiency test score, administered to the student upon entry into the Cantonese site school, was used for purposes of target student selection. After such selection was completed and the target student's parents had been interviewed, measures of exposure to English, both prior to school and currently, were created as proxy indices of proficiency.

The key instructional variable of interest was the student's exposure to L1 and L2 literacy training. Two separate programs were identifiable for students enrolled in the Cantonese site schools. From the Fall of 1975 to the Spring of 1979, certain of the Cantonese site schools offered a bilingual program consisting of both L1 and L2 literacy training. Students receiving parts of this program thus had some early simultaneous literacy instruction in L1 and L2, followed by literacy training exclusively in L2. Second, for relatively older Cantonese-speaking immigrants who had received some education in their country of birth, their initial literacy training was exclusively in L1, and then in L2 upon enrollment in the Cantonese site schools -- a sequenced L1-L2 literacy program.

A third variable was length of residence in the United States (LOR). This variable, which is a proxy for amount of exposure to English, has been found to be of critical importance for L2 acquisition in previous studies (e.g., Cummins, 1980; Cummins, Swain, Nakajima, Handscombe, Green, & Tran, 1981). Hypothesizing that exposure to L2 "natural" language is not as critical for these older students in the acquisition of L2 academic skills as is exposure to L2 formal language, the amount of L2 literacy training received was used as a more direct measure of L2 formal language exposure rather than LOR.

The main dependent measures dealt with L2 literacy skill. Each student's reading and writing ability in English, as well as their oral formal language ability was assessed. Additionally, each student's standardized test scores in reading and mathematics were collected for any such tests administered during their attendance in the Cantonese site schools. A detailed account of the derivation of these measures follows, treating the dependent measures first.

DEPENDENT MEASURES

The chief dependent measures focused on L2 literacy skill. One set of measures came from the instruments assessing academic performance in reading and writing, based on the various scales of the Interactive Reading Assessment System and the Informal Writing Inventory. A second set of measures were from the formal language ratings based on (1) the students' recorded recall of story passages, and (2) their verbal descriptions of their current academic instructional programs and language usage gathered in the Student Interview. As an additional L2 literacy index, all standardized test scores in reading and mathematics were collected for each student. Further, each student's current Cantonese reading proficiency was measured using a parallel version (not a translation) of the Interactive Reading Assessment System in Cantonese.

Below each of the dependent measures is discussed, providing detail on the tasks, materials, scoring, reliability and descriptive statistics on the sample's performance. First, the academic performance measures of reading (in both English and Cantonese) and writing are treated, followed by the formal language tasks, and finally the standardized test scores.

Interactive Reading Assessment System - English

The *Interactive Reading Assessment System - English* (*IRAS-E*) was employed for assessing the students' English reading ability. The *IRAS-E*, an individually administered diagnostic assessment system, was designed for research applications by Dr. Robert Calfee and his associates at Stanford University. Modeled after the informal reading inventory, it provides independent measures of several component skills essential for fluent reading. The materials in the test were selected to cover a wide range of skills and knowledge in the areas of reading and oral language from the level usually expected of a mid-year first grader to that of a junior high school student.

The rationale for the tasks appearing in the *IRAS-E* is based on a theory of reading as a set of independent component skills (Calfee & Drum, 1979). The areas of knowledge assessed in the system include: reading of isolated words, definition of common words within and beyond the student's reading vocabulary, and selected word analysis skills based on the pronunciation of synthetic words. Comprehension of connected text was also assessed in several contexts. The first set of texts consisted of narrative paragraphs typical of those found in reading texts and literature series. Comprehension (based on free recall and cued recall procedures) was assessed for such material read aloud. Comprehension through silent reading of more difficult expository texts was also assessed using similar recall procedures. Further, assessments of narrative comprehension for texts read to the students were made for those students who encountered difficulty in reading the narrative passages orally.

Materials within each subtest were ordered by difficulty based upon grade-level expectations of performance. Thus. material contained within the third level of a given subtest corresponded to material which average third grade students should be able to handle.

The specific structure for each of the component subtests as well as the scoring procedures employed, are presented below. This is followed by a discussion of the IRAS-E reliability assessments, and the descriptive statistics for the Cantonese sample's performance.

Tasks, Materials, and Scoring

Each test was individually administered by trained personnel, taking approximately 45 minutes to complete. The entire testing session was tape recorded and the tapes and individual protocols completed by the tester were given to trained in-house staff for scoring. As mentioned above, the IRAS-E contained six separate subtests. Each one is discussed below, following the order in which it appeared in the testing procedure.

Real word decoding. The first assessment made was that of the student's ability to decode real words.. The materials consisted of eight six-word lists, where lists were ordered such that higher ordered lists contained increasingly more difficult words based on word frequency, number of syllables, and complexity of letter-sound correspondence. Words within a list were equated across these dimensions. The student was presented with the lists and asked to indicate the highest ordered list he thought he could read.

The student was then asked to read the selected list aloud.

If the student failed to read half or more of the words correctly, less difficult lists were presented until the student could read at least half the words in a presented list. Since the lists were ordered in terms of difficulty, higher order lists were not presented under the assumption that the student would not succeed on these more difficult lists. Once a list was successfully passed, success was assumed for the less difficult, lower ordered lists based on the same rationale. For a student who was successful on the first list attempted, more difficult lists were presented until the student failed to read correctly at least half of the words in a given list. Again, success was assumed for lists not presented which were of a lower order than those on which the student was able to successfully met criterion, and failure was assumed for those lists not presented which were of a higher order than those on which the student failed to met criterion.

In scoring the real word decoding scale, each item was assigned a numeric value depending on the quality of the response. A value of 3 was assigned to items given completely correct (disregarding dialectical variations), a 2 for items which were mostly correct (e.g., initial segment correct, but remaining segments incorrect), and a 0 for a wild response or no attempted response.

In deriving a scale score, a "critical index" was computed, based entirely on the lists attempted by the student. This index supplied information about which list was the highest ordered list on which the student succeeded, and also, the relative quality of performance between this highest success list and the next list where failure was obtained. The index consisted of an integer value corresponding to the order of the list of highest success (ranging from 0 to 8), plus a decimal value which was the average of the ratio of assigned points to total possible points on the respective lists of highest success and lowest failure.

Definitions. The next task consisted of eight three-word lists, each list being a subset of the corresponding list of words used in the decoding task discussed above. The student began this task with the lowest level list on which failure was obtained in the decoding task. For each word read by the tester, the student was asked to define it. If an inadequate or questionable definition was given, the student was asked if he could think of another word which meant the same thing. If this probe did not produce an adequate response, then the student was read three alternative definitions and asked to select the best one. The student was considered to be successful on a given list if he could produce an adequate response under any of the above conditions for at least two of the items. As in the previous task, the student was moved through the lists until that point was found where success was obtained on list N, but failure on list N + 1. Again, success was assumed for any untested lists below this point and failure was assumed for any untested lists above it.

For the vocabulary definition task, each item was assigned a value ranging from 0 to 3 dependent upon the quality of the response. A value of 3 was assigned to any item for which the student gave either an adequate "dictionary definition", a fairly extensive functional definition, or a synonym. A value of 2 was given to poor, but acceptable definitions, associations, or unelaborated functional definitions. A value of 1 was given for correct multiple choice definitions if the responses to the first probes were inadequate, but the proper definition was selected among the three alternatives. A value of 0 was assigned whenever the student gave a wild or no response to the first probes, and then made an incorrect choice in the multiple choice condition.

As in the vocabulary decoding task, a critical index was computed to characterize performance on the definition task. Again, the integer portion of this value represented the order of the list of highest success, and the decimal part the average of the proportion of assigned points to possible points over the lists of highest success and lowest failure.

For students who did not have any success in the real word decoding task, the following three tasks requiring decoding skills (synthetic word decoding, sentence reading, and reading comprehension) were not administered (assuming failure), and the listening comprehension of such students was next assessed.

Synthetic word decoding. In the third component of the IRAS-E, the student was presented with six lists of synthetic words, with the first four lists containing six items each and the remaining two lists containing nine items each. The synthetic words were constructed to correspond to English orthography, and lists were ordered by difficulty ranging from simple consonant-vowel- consonant patterns to blends, diagraphs, vowel variations and polysyllabic items (e.g., from hin and pame in the lowest ordered list to rhosmic and conspartable in the highest ordered list). Before being asked to read the synthetic words aloud, the student was told that the items were not real words and that they had no meaning, but that they could be pronounced like English words. Each student began this task on the easiest list, and proceeded to more difficult lists as long as responses were attempted on at least half of the items within a list.

For the lists of synthetic words, each of the items was scored as follows. A value of 3 was assigned to any item that was pronounced without error. A value of 2 was given to those responses that were mostly correct (e.g., correct responses except for a minor letter-sound error such as a vowel shift within vowel family, a stress variant, or pronunciation of a final "e"). A value of 1 was given for responses that were partly correct (e.g., correct responses except for a single vowel or consonant substitution or deletion). A value of 0 was assigned for failure to respond or for mispronunciations beyond those tolerated in the above categories. Note that the scoring was fairly stringent--two major errors within an item were sufficient to receive a score of 0 (e.g., pronouncing *affremiation* as *affrematon*).

Sentence reading. In the next task, students were asked to read short two-sentence paragraphs. There were eight such paragraphs, each selected from the ordered texts described below. Each student began with the first paragraph, and continued to more difficult ones if (1) he read the paragraph in 20 seconds or less (an average reading rate of 51 words per minute for the lowest ordered paragraph and a rate of 81 words per minute for the higher ordered paragraphs), and (2) for three identified critical words, at least two were read correctly.

For the sentence reading task, a critical index was also computed. The integer portion of the value represented the level of highest success (i.e., the highest level where both the time criterion of 20 seconds and the accuracy criterion of at least 1 of 3 critical words read correctly were met). The decimal part of the index was the average of the proportion of correct readings of the three critical words over the levels of highest success and lowest failure.

For students who were not successful in sentence reading, the next task, reading comprehension, was not administered, again assuming failure since some skill in isolated sentence reading is necessary for success in reading connected test. For such students, the listening comprehension task was the next task administered.

Comprehension. In the next task, the student's reading comprehension was assessed. The materials consisted of four well-formed narratives, ordered in difficulty based on word frequency, number of words per sentence, number of sentences, and number of propositions expressed per sentence. Each story was constructed according to the principles of story grammar (Rumelhart, 1977), and associated with each element was a probe question. A student entered this task at the level of highest success found in the sentence reading task described above. The student was presented with the appropriate story and asked to read it aloud. If the student was able to read the story in less than 150 seconds, then he was asked to retell as much of the story as he could. After the student finished the free recall task, any element that was not adequately recalled was then probed with the corresponding question. If the student met the reading time criterion, more difficult narratives were presented until the criterion was not met, or the highest level narrative (level 4) had been given. If the student failed to meet the reading time criterion, easier stories were presented until success was achieved.

For students who could not read aloud the highest narrative level, their listening comprehension was assessed for parallel narrative stories read to them, again using the free and cued recall procedures. If the student recalled half or more of the story elements under either free or cued recall, the next more difficult story was presented until the student failed to meet this criterion, or the highest level narrative had been given. If the student failed to meet this criterion, listening comprehension of less difficult stories was assessed until the recall criterion was successfully met. Students who showed little difficulty in reading the narrative passages, were taken through a set of three ordered expository passages which they read silently. The same recall procedures and criterion for success used for the assessment of narrative listening comprehension were used here.

In scoring the comprehension components of the IRAS-E each element under free and cued recall was scored as "C", completely correct (all or most of the propositions expressed by the element were given correctly), "B", briefly mentioned (only some of the propositions expressed in the element were given correctly), "N", no response (none of the element's propositions were mentioned), or "W", wild response (the student's response was unrelated to the element's propositions). For any element receiving a "C" under free recall, its associated probe was not asked and was coded as an "S" (assumed success).

For passages not attempted because the recall criterion on a more difficult passage had been met, elements under free and cued recall were scored as "S", assumed success. For recall assessments not attempted because the recall criterion on a less difficult passage had not been met, elements were scored as "F", assumed failure. For students who failed to meet the reading time criterion for a given narrative, recall was not assessed, and story elements under such conditions were also scored as "F". The rationale for this procedure was that students reading at such slow rates would not be able to integrate sentence structures in a fast decaying short term memory, and thus would fail to recall the elements adequately. If asked to do so, it was felt that the frustration from likely failure might impair performance on subsequent stories at a less difficult level.

After scoring elements separately for free and cued recall, each element was then assigned a single value ranging from 1 to 8, based on responses under both recall conditions as follows:

free recall value	cued recall value	combined value
S	S	8
C	S	8
B	C	7
B	B	5
B	N,W	4
N,W	C	6
N,W	B	3
N,W	N,W	1
F	F	1

Based on these element values, critical indices were computed for both the reading and listening comprehension tasks. For each, the integer portion of the index represented the level of highest success, based on meeting the criterion of recalling half or more of a passage's elements. The decimal portion of the value was the average of the ratio of assigned points for combined elements to total possible points over the level of highest success and lowest failure. Recall that students passing the highest narrative level (level 4), did not receive the listening comprehension component. Under the assumption that their reading skill was not limited by their decoding skills, but only by their comprehension skills, the scores they received on reading comprehension were used as estimates of their listening comprehension skill.

Reliability and Descriptive Statistics

To assess the reliability of the IRAS-E, a number of analyses were conducted. First, Cronbach s coefficient alpha was computed for total scale scores for each of the following: vocabulary decoding, vocabulary definitions, synthetic word decoding, sentence reading (separate analyses for time and errors), listening comprehension (separate analyses for free recall scores and cued recall scores), and reading comprehension (separate analyses for both recall conditions). For sentence reading, the time measure was one minus the ratio of seconds used to complete the paragraph to the 20 seconds allowed, with all time values of 21 seconds or greater receiving a value of 0 (e.g., a sentence read in 5 seconds was assigned a score of [1 - [5/20]] or .75). The error measure was the proportion of the three critical words in each paragraph read correctly. For the comprehension tasks, the element codes of "C", "S", "B", "N", "W", and "F" were converted to the numeric values of 3, 3, 2, 1, 1, and 1, respectively.

The reliability coefficients were adjusted for all assumed responses in each scale by subtracting the number of such "responses" from the degrees of freedom associated with the residual sum of squares, computing the residual mean squares based on the adjusted degrees of freedom, and then computing the coefficient using this adjusted residual mean square. The adjusted coefficients for each scale are presented in Table 1. With the exception of the listening comprehension scales, the reliability coefficients are quite acceptable. The reason for the lower values obtained for listening comprehension was simply that few students completed this task (due to superior performance in reading comprehension), and for those that did, most received only the upper level story, thus making the preponderance of values in the scale assumed values.

The reliability coefficients computed support the reliability of the

TABLE 1

Interactive Reading Assessment System - English: Reliability Analysis on Raw Scores for Second Through Sixth Grade Sample

Scale		N of Cases	N of Items*	Raw Score Mean Item Total	SD	Mean Number of Actual Responses (k)	α_k
Real Word Decoding		146	45	95.2	37.5	12.5	.91
Definitions		146	24	44.9	13.2	7.6	.77
Sentence Reading:	Time	145	7	2.9	1.5	5.8	.96
	Errors	145	7	5.2	2.1	5.8	.89
Synthetic Word Decoding		146	41	74.0	36.4	37.7	.97
Reading Comprehension:							
	Retell	142	44	51.5	24.8	13.6	.93
	Probe	142	44	54.1	25.1	13.6	.93
Listening Comprehension:							
	Retell	134	24	44.8	9.8	1.9	.47
	Probe	134	24	45.1	9.3	1.9	.42

*Items with no variance were deleted from the analysis.

Note: All scales allowed assumed success and failure, and each of the reliability coefficients was adjusted for the number of such "responses" by reducing the residual degrees of freedom proportionately, and then recomputing the residual mean square and coefficient alpha on which each was based.

total scale measures, but these did not necessarily guarantee that the critical indices associated with each scale were reliable. To address this isssue, correlations were computed between each total scale value and the respective critical index. These correlations ranged from .92 to .98, and thus increase confidence in the reliability of the critical indices. The critical index means and standard deviations for each subscale are presented in Table 2. The data are broken down by current grade level, but caution must be taken in interpreting any grade level differences given the sampling plan employed.

Given the supportive results of these reliability measures, an overall IRAS-E score was derived by averaging the six individual scale critical indices. Thus, the measure obtained for each student was an average level score, and levels within IRAS-E, recall, are roughly grade-level units. The obtained reliability for the total scale scores was .94 (see Table 13 for a summary of the reliability assessments for all the dependent measures).

The correlations among the component scale measures are presented in Table 3. Note that both the scale means and interscale correlations are quite high, suggesting that skilled reading has been largely achieved by these students and that component processes are all well developed.

Interactive Reading Assessment System - Cantonese

The Interactive Reading Assessment System - Cantonese (IRAS-C) was used to assess the students' current Cantonese reading ability. The IRAS-C was constructed in a manner parallel to the IRAS-E by Dr. Kenneth D. Howe, and revised by Dr. Edmund Chi-Tach Lau, both of Stanford University. They were guided in their work by Dr. Robert Calfee who developed the original

TABLE 2
Interactive Reading Assessment System - English: Descriptive Statistics on Critical Indices for Second Through Sixth Grade Sample

	Critical Index Values									
	Grade 2 (N = 34)		Grade 4 (N = 38)		Grade 5 (N = 37)		Grade 6 (N = 37)		Total (N = 146)	
Scale	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Real Word Decoding	4.8	2.2	6.3	2.1	7.1	2.1	7.5	2.1	6.5	2.3
Definitions	4.8	1.3	5.7	1.5	6.2	1.4	6.4	1.5	5.8	1.6
Sentence Reading	4.1	2.6	6.2	2.1	6.9	1.9	6.7	2.0	6.0	2.4
Synthetic Word Decoding	3.6	3.1	5.6	2.5	6.0	2.5	6.1	2.2	5.4	2.7
Reading Comprehension	3.4	2.2	5.8	2.1	6.2	1.6	6.3	2.0	5.5	2.3
Listening Comprehension	4.4	1.8	6.1	1.7	6.5	1.3	6.5	1.6	5.9	1.8
Average Score	4.2	2.0	5.9	1.8	6.5	1.5	6.6	1.7	5.8	2.0

TABLE 3

Interactive Reading Assessment System - English: Correlations Between Critical Indices for Second Through Sixth Grade Sample (N = 146)

Scale	1	2	3	4	5	6
1. Real Word Decoding	-	.74	.83	.83	.80	.77
2. Definitions		-	.65	.58	.69	.71
3. Sentence Reading			-	.79	.88	.81
4. Psuedo Word Decoding				-	.71	.70
5. Reading Comprehension					-	.95
6. Listening Comprehension						-

Note: All Pearson correlation coefficiehts are significantly different from 0 at $p \leq .001$.

assessment system in English described above. The component tasks of the instrument, the materials employed, and the scoring procedures used, are described below, followed by a presentation of the instrument's reliability and descriptive statistics for the Cantonese site sample's performance.

Tasks, Materials, and Scoring

The rationale underlying the *IRAS-C* is the same as that underlying the English version, namely, that skill in Chinese reading can be divided into a number of independent components. The subskills assessed in the *IRAS-C* were isolated word reading, definitions, sentence reading, reading comprehension, and listening comprehension.

In writing Chinese, two character representations are currently being used, traditional and simplified characters. The simplified characters are used in most of mainland China, while traditional characters are used in Canton and Hong Kong and in the United States. The student materials developed for the *IRAS-C* were printed in both character types, and before testing, each student was allowed to select the character type of the materials to be used in testing.

Each of the *IRAS-C* component tasks consisted of six levels, ordered by difficulty based upon grade-level expectations of performance. For each task, the student began with the lowest level and proceeded to more difficult levels as long as criterion performance for the given task was met. Once the student failed to reach criterion on a given level, more difficult levels were not presented, assuming the student would not be able to succeed.

Each test was individually administered by one of two Cantonese- speaking testers, both receiving two day training sessions from an in-house staff member. Each test took approximately 30 minutes to complete, and the entire testing session was tape recorded. After receiving appropriate training, one of the testers scored each protocol based on information contained on both the protocol and tape.

The details of the scoring procedure for each task are presented below, but in general, each was scored by simply assigning the ordinal value of the level of the list of highest success. The more detailed scoring algorithm used in the IRAS-E (that of augmenting the ordinal level of highest success with an index of relative performance across the lists of highest success and lowest failure) was not employed in the IRAS-C. This was due to our sense that the added level of precision was not needed in distinguishing the Cantonese reading skill of the students.

Decoding. The first task assessed the student's ability to recognize isolated words. Each of the six lists comprising the six levels of this task contained six words to be read. The first two lists contained single character words, the next three lists contained double character words, and the last list contained words represented in three to four characters. The student was presented with more difficult lists as long as half or more of the words within the attempted list were read correctly.

Definitions. The next task consisted of six three-word lists, each list being a subset of the corresponding list of words used in the word reading task above. For each word read by the tester, the student was asked to define it. If an inadequate or questionable definition was given, the student was asked to use the word in a sentence. The student was considered to be successful on a given list if adequate responses were produced under either of these conditions.

For students who could not read the words presented in the first list of the word reading task, the next two tasks, sentence reading and reading comprehension, were not administered (assuming failure), and the listening comprehension of such students was next assessed.

Sentence reading. In this task, the students were asked to read, at each level attempted, three short unrelated sentences. Each student began with the first level and continued to more difficult levels if (1) the sentence set was read in 20 seconds or less, and (2) at least half of the words were read correctly.

For students who were not successful at the lowest level of sentence reading, the next task, reading comprehension, was not administered, again assuming failure since some skill in isolated sentence reading is necessary for skill in reading connected text. For such students, the listening comprehension task was the next task administered.

Comprehension. In the next task, the student's reading comprehension was assessed. The materials consisted of six well-formed narratives, ordered in difficulty based on word frequency, sentence length, and number of expressed propositions. As in the English version, comprehension of story elements was assessed through both free and cued recall procedures. Each student began the task with the first level, and continued to more difficult passages if (1) the story was read in 150 seconds or less, and (2) half or more of the elements were adequately mentioned under either recall condition.

Once the student failed to meet the criteria for oral reading, listening comprehension for stories read to the student by the tester was assessed, beginning at the level of failure in oral reading. Comprehension of more difficult stories was tested if the recall criterion of half or more elements mentioned adequately under either free or cued recall was met.

As mentioned above, for each of the five IRAS-C component tasks, students received as scores the ordinal value of the level of highest success. Below, the descriptive statistics based on these scores and the reliability assessment of the instrument are described.

Reliability and Descriptive Statistics

The means and standard deviations of the success levels for each of the tasks are presented in Table 4. Again, the values are broken down by grade level, but caution must be exercised in interpreting any grade-level differences for this sample. Correlations between the component scales are presented in Table 5. As can be seen, those scales which are heavily dependent upon decoding skills tend to be highly related (decoding, sentence reading, and reading comprehension), as are the scales dependent upon comprehension skill (definitions and listening comprehension).

The reliability of the average IRAS-C score was assessed by computing Cronbach's alpha over the five component scale scores. The obtained value of .94 indicates that the average scale score is a highly reliable summary measure of performance in this task (see Table 13 for a summary of the reliability analysis).

Informal Writing Inventory

TABLE 4
Interactive Reading Assessment System - Cantonese: Descriptive Statistics on Success Levels for Fourth Through Sixth Grade Sample

Scale	Grade 4 (N = 38)		Grade 5 (N = 37)		Grade 6 (N = 37)		TOTAL (N = 112)	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Decoding	1.4	1.3	1.6	1.8	2.0	2.0	1.7	1.7
Definitions	2.8	1.2	3.3	1.3	3.5	1.6	3.2	1.4
Sentence Reading	1.1	1.2	1.8	2.0	1.9	2.2	1.6	1.9
Reading Comprehension	1.5	1.5	1.9	1.9	2.1	2.0	1.8	1.8
Listening Comprehension	3.3	1.3	3.8	1.6	3.8	1.5	3.6	1.5
Average Score	2.0	1.1	2.5	1.6	2.7	1.7	2.4	1.5

TABLE 5
Interactive Reading Assessment System - Cantonese:
Correlations Between Success Levels for Fourth Through Sixth Grade Sample
(N = 112)

Scale	1	2	3	4	5
1. Decoding	-	.65	.85	.83	.75
2. Definitions		-	.69	.66	.71
3. Sentence Reading			-	.89	.75
4. Reading Comprehension				-	.77
5. Listening Comprehension					-

Note: All Pearson correlation coefficients are significantly different from 0 at $p \leq .001$.

The Informal Writing Inventory (IWI) was used to assess the target student's English writing skills. The IWI was administered only to the upper grade students, based on the judgment that the majority of the second grade students would not be able to respond to most of the items.

The instrument, developed by the P. K. Yonge Reading-Writing Project at the University of Florida by Barbara Kaiser (1981) under the direction of Dr. Hellen Guttinger, consisted of a series of tasks designed to tap various writing skills. Each of these tasks, the materials they incorporated, and the procedures used in their scoring, are discussed below. This discussion is followed by a presentation of the instrument's reliability and the descriptive statistics associated with the sample's performance.

Tasks, Materials, and Scoring

The IWI protocols were scored by an in-house staff member trained in linguistics and language development, assisted by a graduate student from the University of Texas at Austin. Both received two half-day training sessions directed by an individual with previous experience in scoring the instrument. Most of the scoring was straightforwardly objective. For the composition tasks which required holistic judgments, interrater reliability was assessed prior to scoring by having each of the three participants score six protocols, each containing five compositions. On 83% of the ratings there was total agreement, and those remaining differed by only one category. Each of the IWI component tasks and derived scores are discussed below (in the order in which they were presented during testing).

Complete sentences. In the first task, the student was presented with eight word groups, and was asked to indicate which ones formed complete sentences, four of which did. The student's score simply consisted of the number of correct decisions (acceptance of a complete sentence or rejection of an incomplete sentence).

Cloze procedure. In this cloze task, the student was presented with a short, seven-sentence, well-formed story, where each sentence contained one or more blanks which the student was asked to complete. For each of the eight blanks to be filled, two values were assigned during scoring. First, a point was given if the inserted material was syntactically and semantically consistent with the sentence frame. Second, the creativity of each choice was rated, and assigned a value of 0 (no response), 1 (a fairly common choice), or 2 (a relatively creative, mature choice).

Capitalization and punctuation. The third task presented the student with five unrelated sentences containing no capitalization or punctuation, and the student's task was to rewrite the sentences supplying such. In scoring, a point was given for each appropriate correction (25 were possible), and a point was subtracted for each unnecessary change. The student received as a score the difference between these two indices.

Paragraph arrangement. Here, the student was presented with a well-formed story constructed only with short, choppy sentences. The student was asked to rewrite the story by combining the sentences to make the story easier to read. In scoring this task, the number of words written was summed as well as the number of complete sentences or independent clauses joined by coordinate conjunctions. The ratio of these two measures was taken to provide an index of the student's ability to combine the given short sentences into richer constructions.

Sentence selection. In this task, the student was shown a picture and 10 randomly ordered sentences, 6 of which could be ordered to form a story consistent with the action depicted. The student was first asked to select those 6 sentences that would make the best story corresponding to the picture, and then to number them to indicate the order they should appear in the story.

Each student received two scores on this task. First, the number of correct decisions was obtained by assigning one point for each sentence that was appropriately selected or rejected. Second, an index of the proper ordering of the selected sentences was computed as follows. First, sentences assigned an order which were not among the six appropriate sentences were disregarded, as were sentences which were among those six appropriate sentences, but for which the student did not assign an order. This then defined the set of matches between the appropriate sentence set and the sentences actually ordered by the student. Once this was completed, ordering of the sentence sets was rectified to disregard any mismatches. Finally, Spearman's rho was calculated as an index of the correspondence between the ordering of the sentences selected by the student and the order those selected sentences should have been given in the story.

Compositions. The final five tasks required the student to compose short pieces based on five separate scenarios. First, the student was asked to write an informal note to his parents explaining his absence in order to help a brother fix his bike. Second, the student was asked to write a formal letter requesting information relevant to a class assignment. Third, the student was shown a picture of a strange creature, and was asked to create an imaginative composition describing the creature, where it lived, and what it did. In the fourth composition task, the student was shown six ordered pictures, and was asked to write a corresponding narrative. In the final composition task, the student was shown a drawing of a rocket prepared for launching, and was to simply write a description of those things which seemed important.

For each of the five composition tasks, two holistic ratings were made. The first reflected the student's ability to handle the mechanics of writing. For each composition, a value of 0 was assigned if the writing sample was too small to allow a rating. If there was a sufficient sample, then the composition was assigned a value ranging from 1 (evidence of serious difficulty with writing conventions--spelling, punctuation, capitalization, apostrophe use, letter form, and so forth) to 4 (perfect or near perfect control over writing conventions). Each composition was also assigned a value based on the quality of the composition. Again, a value of 0 was assigned for samples too small to rate, and those with sufficient sample length were assigned values ranging from 1 (little ability shown to communicate the information demanded by the task) to 4 (no difficulty in communicating in a clear, elaborated, and detailed manner).

Reliability and Descriptive Statistics

To assess the internal consistency of the IWI, three separate computations of Cronbach's coefficient alpha were carried out. First, for the sentence selection task, each of the 10 sentences, scored as a correct/incorrect decision, was combined to form a total sentence selection scale. The item means and standard deviations are presented in Table 6, and the obtained reliability coefficient was .76. Second, the mechanics and quality ratings for each of the five composition tasks were combined to form total mechanics and total quality scale scores. Item means and standard

TABLE 6
Informal Writing Inventory: Descriptive Statistics on Raw Scores for Sentence Selection Task for Fourth Through Sixth Grade Sample (N = 112)

Sentence Number	$\bar{X}$	SD
1	.85	.36
2*	.88	.32
3*	.70	.46
4*	.83	.38
5	.81	.39
6	.60	.49
7*	.74	.44
8	.55	.50
9*	.72	.45
10*	.76	.43
Total Scale Score	7.45	2.39

*These sentences are those which could be ordered to form a story consistent with the action depicted. A value of 1 was assigned for a correct decision (a sentence appropriately selected or rejected) and 0 for an incorrect decision (a sentence inappropriately selected or rejected).

deviations for these are presented in Table 7, and the obtained reliability coefficients were .91 and .89 for the quality and mechanics scales, respectively.

Given the adequacy of these measures, an IWI total scale reliability was computed. The cloze measures and the paragraph arrangement ratio were dropped from the scale since it appeared that these items entailed a different set of skills than those measured by the other items. Because the subtask scores were on different scales of measurement, the items selected for inclusion were standardized (across grades 4 through 6), and the resulting IWI total scale included the following: recognition of complete sentences, sentence capitalization/punctuation (the difference score), sentence selection (both number of correct decisions and the order index), and composition (average quality and average mechanics scores). The raw score values for these components are presented in Table 8. The reliability coefficient (Cronbach's alpha) for the overall IWI measure was .85 (see Table 13 for a summary).

Formal Language Tasks: Student Interview and Passage Retell

Two tasks were designed to elicit "formal" language samples from the students in the study. These were (1) an adult-student dialogue, the Student Interview, and (2) the retelling of narrative/expository text during the administration of the comprehension component of the IRAS-E. Both were carried out in English at the child's school by the same examiner, a Cantonese-English bilingual data collector with teaching experience in both the United States and Hong Kong. All language samples were tape recorded using a standard cassette recorder and a lapel microphone fastened to the child's clothing.

TABLE 7
Informal Writing Inventory:
Descriptive Statistics on Raw Scores for Composition Tasks for Fourth Through Sixth Grade Sample (N = 112)

Composition	Quality		Mechanics	
	$\overline{X}$	SD	$\overline{X}$	SD
Informal Note	2.09	1.20	2.38	1.13
Formal Letter	1.94	1.26	2.37	1.04
Imaginative Composition	1.89	1.03	2.34	1.02
Narrative	1.90	1.00	2.23	1.05
Complex Composition	1.61	1.02	2.21	1.02
Total Scale Score	9.43	4.77	11.53	4.43

TABLE 8
Informal Writing Inventory: Descriptive Statistics on Raw Item Scores for Fourth Through Sixth Grade Sample

Item	Grade 4 (N = 38)		Grade 5 (N = 37)		Grade 6 (N = 37)		Total (N = 112)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Recognition of Complete Sentences	5.9	1.6	6.8	1.2	7.0	1.0	6.5	1.4
Cloze: Proper Choice	4.2	2.3	5.0	2.8	5.0	2.5	4.7	2.5
Creative Choice	5.4	2.8	6.2	3.4	6.4	3.0	6.0	3.1
Sentence Capitalization/Punctuation:								
Proper Correction	10.8	4.4	12.9	4.4	13.1	6.1	12.3	5.1
Unnecessary Change	1.8	2.1	2.0	2.2	1.4	1.9	1.7	2.1
Difference	9.0	4.9	10.9	4.3	11.7	5.8	10.5	5.1
Paragraph Arrangement:								
Number of Words	75.8	36.7	76.6	33.0	76.2	34.5	76.2	34.5
Number of Major Clauses	15.1	7.6	14.4	6.4	14.6	6.5	14.7	6.8
Ratio of Words to Clauses	4.9	1.1	5.3	.8	5.1	.9	5.1	1.0
Sentence Selection:								
Number of Correct Decisions	6.7	2.4	7.9	2.4	7.7	2.3	7.4	2.4
Spearman rho	.1	.7	.4	.7	.5	.6	.4	.7
Composition--Informal Note:								
Quality	1.6	1.0	2.4	1.2	2.4	1.2	2.1	1.2
Mechanics	1.9	.9	2.6	1.2	2.6	1.2	2.4	1.1
Formal Letter:								
Quality	1.4	1.1	2.2	1.3	2.1	1.3	1.9	1.3
Mechanics	2.0	.7	2.5	1.0	2.6	1.2	2.4	1.0
Imaginative Work:								
Quality	1.5	.9	2.2	1.1	1.9	1.0	1.9	1.0
Mechanics	2.1	.8	2.6	.9	2.4	1.3	2.3	1.0
Narrative:								
Quality	1.6	.9	2.2	1.0	1.9	1.0	1.9	1.0
Mechanics	2.1	.9	2.4	1.0	2.3	1.2	2.2	1.0
Complex Work:								
Quality	1.4	.8	1.6	1.0	1.8	1.2	1.6	1.0
Mechanics	1.9	.8	2.4	1.0	2.3	1.2	2.2	1.0
Average Quality	1.5	.8	2.1	1.0	2.0	1.0	1.9	1.0
Average Mechanics	2.0	.7	2.5	.8	2.4	1.1	2.3	.9
Scale Score[1]	-.4	.6	.2	.7	.2	.7	0.0	.8

[1] These scores are averaged z-scores for the following items: recognition of complete sentences, sentence capitalization/punctuation (the difference score), sentence selection (both number of correct decisions and the ordering index), and composition (average quality score and average mechanics score).

The Student Interview (SI) consisted of a series of questions, some of which were open ended, about the child's (1) past and present patterns of language use, (2) classroom program in previous years, and (3) current classroom program. The segments of the interview in which the child discussed his current classroom program and his past and present patterns of lanugage use were isolated for analysis. These sections of the interview lasted approximately six minutes.

The Passage Retell (PR) task in the IRAS-E required the child to retell each passage encountered in oral reading, silent reading, and listening comprehension. The retelling of the passage attempted by the student which provided the largest English language sample was used for assessing oral language performance here.

The specific criteria and procedures for scoring the formal oral language samples were based on a framework developed at SEDL which encompassed the central contrasts between natural and formal language (Calfee & Freedman, 1980; Canale & Swain, 1980; Cummins, 1980, 1981; Olson, 1977, 1980; Tannen, 1981; Wells, 1975, 1981a, 1981b). The specific rationale and procedure for scoring the scales are described below (the actual scales may be found in Appendix A), followed by a discussion of the Cantonese sample's descriptive statistics for these items, a presentation of a factor analysis conducted on the items, and a subsequent reliability assessment.

Student Interview: Tasks, Materials, and Scoring

The specified section of each student interview was first transcribed. Scoring was done by a project staff member with training in language acquisition and language analysis, assisted by a graduate student in linguistics from the University of Texas at Austin. While listening to the audio-taped portion of the interview and viewing the transcript of the student's performance, the scorer coded pertinent features of the performance on the transcript (codes were specified for these features). Immediately following this procedure, the scorer rated the student's performance on each of the scales, reviewing the tape and transcript as needed.

In scoring the various aspects of the language sample from the SI, the speech of both the interviewer and the child were taken into account. The rationale for the scoring of each criterion is discussed below.

Pronunciation. The student's mastery of the phonemes of English in connected speech was rated. Although prosodic features (e.g., intonation and stress) were not specifically rated, it appears that the development of these features approximates phonological development.

Interviewer speech. The interviewer's rate of speech and level of sentential complexity used with the child were rated as one index of the child's comprehension. These aspects of the interviewer's speech may be indicative of her responses to visual and nonverbal cues which may otherwise not be reflected in the audio recordings.

Appropriateness of response. A second index of the child's comprehension was inferred from his responses to the interviewer's comments and questions, under the assumption that lexical and syntactic confusion may give rise to inappropriate responses.

Request for repetition. Both direct and indirect requests for repetition were assessed as a signal of breakdown in comprehension which may be the result of lexical and syntactic confusion.

Richness of communication. The information the child conveyed was assessed in terms of quantity of output (incomplete, adequate, elaborated) and quality and accuracy of vocabulary used. Use of detail was scored, as was the use of precise vocabulary.

Inflection of verbs and nouns. Inflection of English verbs and nouns is a common problem for Chinese speakers learning English. The frequency of errors of this type was rated on this scale.

Article, preposition and pronoun use. The English system of articles, prepositions, and pronoun poses many and long-lasting problems for the Cantonese speaker learning English (Mace-Matluck, 1977). The frequency of omission or superflous use of these forms was rated.

Syntactic structure sophistication. In this measure of mastery of syntactic structures, both the level of sophistication attempted and the failures in syntactic use were evaluated together. That is, in the case of two children who make the same number of errors in the conversation, one child may make all errors in "difficult" or more advanced structures (in terms of the developmental order of acquisition), while the other's errors may be found in the use of elementary syntax. The child with errors in the most basic structures may or may not attempt more complex structures. Thus, both the willingness to take risks and actual successes were measured on this scale. The definition of complexity was made intuitively in these ratings, referring broadly to use of relative clauses, compound subjects and predicates, and differentiated use of verb tenses and modals.

Ease. The child's feeling of ease, as reflected by his tone of voice, style of responses, amount and kind of probing by the interviewer, and interviewer's comments, was rated. It should be noted that it is culturally appropriate for Chinese children to act in a reserved and quiet manner with adults. The rating of 0 (extremely reserved and shy) was the category corresponding to behavior judged to be more aloof or shy than the culture demands.

Sociolinguistic appropriateness. This rating relates to the child's awareness of the formality of the situation and his ability to adjust his speech accordingly. The child's ability to plan and execute precise, explicit, and well-formed responses on demand was rated.

Passage Retell: Tasks, Materials, and Scoring

The child's retell performance on all passages completed in the *IRAS-E* was transcribed. Scoring was done by the same project staff member that scored the *SI*, assisted by a graduate student in linguistics (different from the assistant rating the *SI* protocols). Procedures similar to those used in scoring the interview were followed in scoring these. The rationale for each formal language dimension rated in the retell samples is discussed below.

Pronunciation. See "Pronunciation" above for the rationale for this scale.

Inflection of verbs and nouns. See "Inflection of verbs and nouns" above.

Article, preposition and pronoun use. See "Article, preposition and pronoun use" above.

Semantic appropriateness. See "Appropriateness of response" above.

Syntactic sophistication. See "Syntactic structure sophistication" above.

Sociolinguistic appropriateness. See "Sociolinguistic appropriateness" above.

Cohesion: Verb tense continuity. The child's success in achieving grammatical cohesion was measured in terms of his ability to select and maintain appropriate verb tense throughout the retelling of the passage.

Cohesion: Reference. In this scale, the child's success in achieving grammatical cohesion through the use of anaphoric pronouns was measured. Some children attempt the retelling of the passages without supplying proper antecedents for pronouns used (the assumption is that those children assume that the listener is already familiar with the "actors" in the passage); others use pronouns inconsistently, sometimes with and sometimes without proper antecedents.

Use of transition expressions. The children's success in maintaining cohesion was measured through his use of logical and structural connectors such as "first", "after lunch", "the next thing he knew", "when they arrived at the park", "meanwhile". The range and variety of transition expressions were considered as well as the frequency and adequacy of the use of this device.

Coherence: Relevance of ideas. The child's success in achieving coherence was measured in terms of limiting the information given to only that which was provided within the text. No amplification or digression was permitted. Assumptions, if included, had to be marked as such.

Coherence: Consistency of ideas. This scale measured the extent to which the child achieved coherence through providing information that was accurate in content and consistent with ideas within the text.

Coherence: Organization of ideas. This scale measured the child's success in retelling the text to conform to the discourse structure of the genre to which the passage belonged. Elements of expository passages are clustered in accordance to their logical relationship to each other, while elements of narrative are temporally organized.

Awareness of audience. Rated in this scale was the child's success in signaling his awareness that a listener (audience) was present and that a "formal" presentation was required, as opposed to an interactive "conversation".

Explicitness. This scale measured the child's success in stating meaning explicitly. Frequency of use of precise vocabulary and the specification of criterial features in the form of adjectivals was rated.

Elaboration. This scale measured the child's awareness that the message should be contained within the linguistic forms per se, and that he should not assume a shared knowledge of events. The extent to which details were explicitly provided was rated.

Each of the Student Interview and Passage Retell transcriptions were scored separately. Since item scores within both were not assigned on the same scale (one scale consisted of only two values and others had as many as five values), item values were standardized by computing for each the proportion of the number of points assigned relative to the total number of points possible.

Descriptive Statistics

Item descriptive statistics for the Cantonese sample are presented in Table 9, for the Student Interview data, and Table 10, for the Passage Retell data. Again, the data are broken down by current grade level.

Factor Analysis

Given the exploratory nature of the formal language rating framework, we conducted a factor analysis on the combined items from the SI and PR tasks. The factor correlations obtained (under varimax rotation) are presented in Table 11.

Based on these loadings, three scale scores were computed: items were selected which loaded uniquely on a given factor with an absolute value of .45 or higher, and doubly loading items were dropped as were those that failed to met the .45 correlation coefficient criterion. Items satisfying the criterion for a given factor were then averaged. The three scale scores created and their component items were: Discourse (all items from the PR task, dropping Awareness of Audience), Grammar (Pronunciation; Appropriateness of Response; Inflection of Verbs and Nouns; Article, Preposition and Pronoun Use; Syntactic Sophistication; and Sociolinguistic Appropriateness -- all from the SI), and Interactional Style (Request for Repetitions; Richness of Communication; and

TABLE 9

Formal Language Tasks:
Descriptive Statistics on Percentage Scores for Student Interview Ratings for Second Through Sixth Grade Sample

Item	Grade 2 (N = 34)		Grade 4 (N = 38)		Grade 5 (N = 37)		Grade 6 (N = 37)		TOTAL (N = 146)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Pronunciation	47.1	28.0	55.9	29.3	60.1	33.6	60.8	35.6	56.2	32.0
Interviewer Speech	38.2	42.7	64.5	43.4	71.6	38.3	68.9	43.1	61.3	43.5
Appropriateness of Response	55.9	34.3	73.7	32.3	82.4	26.9	75.7	32.5	72.3	32.7
Request for Repetition	62.7	40.0	76.3	37.1	90.1	23.4	86.5	29.9	79.2	34.4
Richness of Communication	30.9	37.0	42.1	35.9	58.1	38.2	54.1	36.1	46.6	37.9
Inflection of Verbs and Nouns	52.9	36.8	50.0	40.3	50.0	44.1	55.4	45.3	52.1	41.5
Article, Preposition, and Pronoun Use	58.8	39.8	60.5	40.5	51.4	43.3	54.1	43.1	56.2	41.5
Syntactic Sophistication	30.1	29.4	43.4	37.1	45.9	38.9	52.0	36.5	43.2	36.3
Ease	54.4	31.1	53.9	29.4	66.2	33.4	63.5	30.4	59.6	31.2
Sociolinguistic Appropriateness	29.4	30.4	39.5	34.5	48.6	42.0	50.5	39.0	42.2	37.4

TABLE 10
Formal Language Tasks:
Descriptive Statistics on Percentage Scores for Passage Retell Ratings for Second Through Sixth Grade Sample

Item	Grade 2 (N = 34)		Grade 4 (N = 38)		Grade 5 (N = 37)		Grade 6 (N = 37)		TOTAL (N = 146)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Pronunciation	41.2	36.3	55.3	34.0	67.6	32.7	62.2	35.2	56.8	35.5
Inflection of Verbs and Nouns	36.8	39.5	48.7	37.6	58.1	40.0	45.9	38.0	47.6	39.1
Article, Preposition and Pronoun Use	27.9	35.2	42.1	37.7	58.1	40.0	48.6	36.3	44.5	38.6
Semantic Appropriateness	44.1	40.4	65.8	35.1	71.6	36.4	66.2	35.5	62.3	37.9
Syntactic Sophistication	21.3	21.4	31.6	27.7	42.6	30.5	36.5	28.0	33.2	28.0
Sociolinguistic Appropriateness	20.6	23.2	30.7	25.0	39.6	32.2	33.3	23.6	31.3	26.9
Cohesion: Verb Tense Continuity	28.4	34.9	57.9	45.0	60.4	42.9	59.5	45.9	52.1	44.1
Cohesion: Reference	44.1	40.4	61.8	39.3	60.8	33.6	56.8	37.6	56.2	38.0
Use of Transition Expressions	30.9	27.6	51.3	24.6	55.4	25.8	48.6	25.0	46.9	27.1
Coherence: Relevance of Ideas	55.9	47.3	73.7	34.4	83.8	31.3	77.0	36.5	72.9	38.6
Coherence: Consistency of Ideas	33.8	38.4	67.1	35.4	60.8	39.3	62.2	39.8	56.5	39.9
Coherence: Organization of Ideas	44.1	40.4	44.7	32.4	54.1	29.8	48.6	34.3	47.9	34.2
Awareness of Audience	38.2	49.3	47.4	50.6	56.8	50.2	64.9	48.4	52.1	50.1
Explicitness	41.2	39.8	60.5	40.5	70.3	36.2	66.2	37.4	59.9	39.7
Elaboration	33.8	38.4	35.5	32.7	47.3	37.2	43.2	29.2	40.1	34.6

TABLE 11
Formal Language Tasks:
Factor Analysis on Combined Items from Student Interviews and Passage Retell for Second through Sixth Grade Sample (N = 146)

Item	Factor 1	Factor 2	Factor 3
Student Interview:			
Pronunciation	.27	.78	.23
Interviewer Speech	.26	.62	.49
Appropriateness of Response	.28	.48	.25
Request for Repetition	.25	.30	.54
Richness of Communication	.27	.27	.84
Inflection of Verbs and Nouns	.10	.78	-.08
Article, Preposition and Pronoun Use	.03	.81	-.13
Syntactic Sophistication	.26	.80	.40
Ease	.10	.04	.64
Sociolinguistic Appropriateness	.26	.80	.36
Passage Retell:			
Pronunciation	.70	.40	.30
Inflection of Verbs and Nouns	.59	.43	.01
Article, Preposition and Pronoun Use	.58	.31	.16
Semantic Appropriateness	.73	.29	.21
Syntactic Sophistication	.64	.45	.24
Sociolinguistic Appropriateness	.66	.37	.14
Cohesion: Verb Tense Continuity	.46	.32	.14
Cohesion: Reference	.66	.11	.06
Use of Transition Expressions	.78	.18	.19
Coherence: Relevance	.80	.09	.25
Coherence: Consistency	.65	.20	.10
Coherence: Organization	.68	-.01	.09
Awareness of Audience	.37	-.10	.36
Explicitness	.67	.17	.34
Elaboration	.55	.03	.34

Note: Underlined coefficients represent items included in the respective scale based on the criterion of uniquely loading on a single factor with a value greater than |.45|

Ease -- all from the SI). Scale means and standard deviations are presented in Table 12.

Note that the SI and PR items loaded on separate factors even though six of the items rated identical grammatical aspects of the language used by the student. This supports the contention that the demands of the two tasks were quite different. In the SI, the student was providing information which the interviewer did not already know, while in the PR task, the student was providing information that was clearly known to the tester. The latter placed the student in a much more formal task where the emphasis was not on what was communicated but on how the communication was made. The factor solution suggests that there are linguistic consequences realized in the two different situations.

Items from the SI loaded on two factors in a pattern consistent with that found by Cummins, et al. (1981) using similar ratings in an interview setting. The Grammar scale consisted of items which related to linguistic form and reflected the students' use of correct and appropriate English constructions. The factor of Interactional Style seemed to reflect the students' relative extroverted-introverted character -- a language independent factor. Note that the item "Request for Repetitions" was expected to relate to grammar skill as it was thought that such requests would increase with increased failures in comprehension due to poor English comprehension skills reflected in lexical and syntactic confusions. One explanation for why instead it was found to be related to the two other Interactional Style items was that relatively introverted students would not be as likely to make such requests even when comprehension had failed.

TABLE 12
Formal Language Tasks:
Descriptive Statistics on Scale Scores for Second through Sixth Grade Sample

	Grade 2 (N = 34)		Grade 4 (N = 38)		Grade 5 (N = 37)		Grade 6 (N = 37)		Total (N = 146)	
Scale	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Interactional Style	49.3	29.9	57.5	27.6	71.5	27.4	68.0	25.3	61.8	28.6
Grammar	45.7	24.4	53.8	28.9	56.4	32.5	58.1	34.4	53.7	30.4
Discourse	36.0	29.0	51.9	23.7	59.3	25.1	53.9	23.4	50.6	26.4

Note: All scores are averaged item scores which were percentages of points assigned relative to the total possible points on the scale.

The items for the PR task can be categorized in terms of grammar- related and discourse-related features of the retelling task, yet they all loaded on the same factor (inter-item correlations ranged from .26 to .79). This argues that relative to the SI task, linguistic form in the PR task was more related to discourse ability in this task than to linguistic form as exhibited in the SI situation. Accordingly, we have collapsed the two sets of items into a single discourse scale.

Reliability

Given that the factor analysis solution does not guarantee the reliability of the suggested scales, the items from the three respective scales were subjected to separate reliability analyses. Reliability coefficients (Cronbach's alpha), obtained for the scales of Discourse, Grammar, and Interactional Style, were .94, .90, and .77, respectively (see Table 13 for a summary of these analyses).

Standardized Achievement Test Scores

As noted in the previous discussion, after target selection had been completed, each selected student's permanent record file was examined, and all standardized test score information from each student's first appearance in the district schools was recorded. The California Achievement Test (CAT) had been used throughout the district for the past several years; percentile scores served as the primary index of performance. (For some of the sixth grade sample, the Metropolitan Achievement Test percentiles were available during third grade, but examination of these protocols showed growth patterns relatively similar to those from the CAT.)

The testing schedule for students in categorical programs (e.g.,

TABLE 13
Dependent Measures:
Reliability Summary for Second through Sixth Grade Sample

Scale	N of Cases	N of Items	Mean Item Total	SD	α
Interactive Reading Assessment System-English	146	6	35.0	11.8	.94
Informal Writing Inventory	112	6	0.0	4.5	.85
Formal Language: Discourse	146	14	708.3	370.2	.94
Grammar	146	6	322.0	182.6	.90
Interactional Style	146	3	185.4	85.8	.77
Interactive Reading Assessment System-Cantonese	112	5	11.9	7.4	.94

bilingual and disadvantaged) called for administration of standardized tests in reading and mathematics during the fall (September) and spring (April) of each year. Our examination of the records for the students in the target sample suggests that the schedule of administration was followed quite consistently and comprehensively; the amount of missing data was quite small, and irregularities in the test scores were few in number.

In contrast, the very nature of the target population posed some interesting challenges for analysis of longitudinal trends. For example, many of the children entered district schools fairly late in their elementary school career, some as late as fifth grade. Hence, the extent of the data record varied from one student to another. Some data were missing due to extended absences or to the student's inability to complete the test (in English). More to the point, because of the immigrant status of many of the youngsters, there was considerable variation in the entry grade for the target sample; some students entered as kindergartners, but others entered as late as fifth or sixth grade.

The most straightforward model for analysis of percentile scores might lead one to conclude that the absence of some data points should not be that much of a problem. If one assumes that the student's percentile rank is relatively constant over the school years, then the most appropriate model is a horizontal line through the available data points; stated most simply, one should compute the average percentile, and any deviation from the average can be considered to be random error of measurement. The appropriateness of this model might be questioned for students in general -- it is almost certainly improper for immigrant children from non-English language backgrounds. Such youngsters, because of their unfamiliarity with English, are likely to perform well below their "true" percentile rank when first tested, because of difficulty in understanding the instructions and unfamiliarity with the multiple-choice format. As they become schooled in the conventions of American classrooms, and as they begin to master the English language, their percentile standing should increase to a level that more accurately reflects their academic standing. Thus, the analytic task is to propose a learning model appropriate to percentile scores.

The nature of the problem becomes apparent by looking at a few typical protocols (Figure 1). The graph shows the percentile scores in reading and mathematics for four students selected to represent the range of variations in growth patterns. The vertical axis is marked off in percentiles; the horizontal axis shows the points at which fall and spring tests were administered from second through sixth grade (no first grade scores were available). As can be seen in the graphs, there was considerable variation in the number of test scores available, in the time period covered by the scores, and in the consistency of performance. Students 038 and 044 are typical of students who were tested from beginning in second grade up through their grade assignment at the time of the study (fifth grade for student 038, and sixth grade for student 044). Students 055 and 064, in contrast, entered the district in the middle of fourth grade and at the beginning of third grade, respectively, and had not completed sixth grade at the end of the study. The first three students in the graph were tested in both fall and spring, once testing was initiated, while student 064 was not tested in the fall of fourth grade.

The patterns of growth also vary from one student to another. For mathematics, most students in the target sample showed a tendency toward an

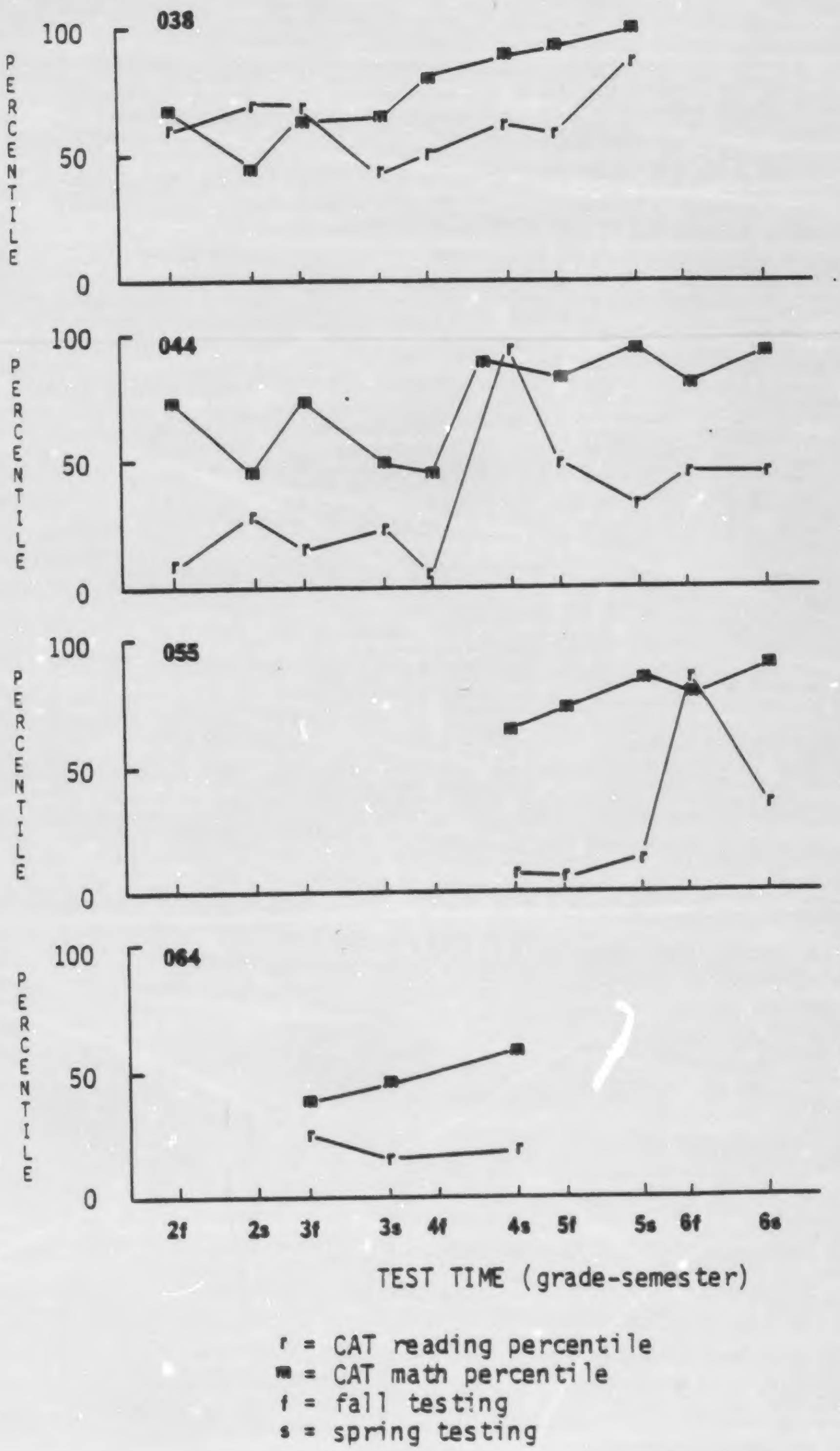

Figure 1. Plots of CAT reading and math percentiles for four students.

increased percentile standing over successive test points--the four students in Figure 1 illustrate this trend. Fluctuations and incongruities do appear in many of the records; student 044, for instance, performs in a "sawtooth" fashion during the second and third grades. Some of these departures from a strict upward trend are no doubt due to random events; others are probably associated with changes in the level of the test and other systematic sources of variation. All such fluctuations were treated as error in the present analysis. The growth patterns in reading were somewhat more complex. One common pattern, illustrated by the top three panels in the graph, was a tendency toward slow and often inconsistent improvement. A second configuration, represented to some extent in the bottom panel, was a trend toward declining percentile rank from fourth grade on. In some instances, youngsters would improve slightly during the primary grades, and then decline slowly over the upper elementary years. These patterns, though complex for purposes of analysis, are in fact consistent with national trends in reading achievement. Finally, as typified in Figure 1, the students in the target sample were almost always better in mathematics than in reading; the upward trend in mathematics was stronger than in reading, and the final percentile standing in mathematics was generally much higher than in reading, and well above the national average of 50 percent.

Given the evidence that percentile ranks were changing over time, it is clear that the simplest model, average percentile, is an inappropriate index of standardized achievement over time. Depending on when the student was tested during the development sequence, performance might be over- or underestimated. The next problem, then, is to construct a more adequate model of performance. As a basic step in this construction, it is necessary to determine what index of performance might be most informative for purposes of this study. We decided that an estimate of the students' percentile rank at the end of elementary school would serve this purpose quite well. The goal of most categorical programs is to help youngsters who are, for some reason, at a disadvantage to overcome that disadvantage, as soon as possible, and prior to entry into the secondary schools if that is feasible. Accordingly, we asked the question: Given the set of standardized test scores available for a student, what is our best guess about his or her percentile ranking at the time of exit from sixth grade?

The first approach taken to this question is shown in Figure 2. The horizontal axis was redefined as a measure of years prior to sixth grade graduation, taking April of the sixth grade as the zero point on the time scale, and counting backward in time. Thus, the test point in the spring of fifth grade is "graduation time minus one year," and so on, much like the countdown for a rocket launch. The simplest growth model is a straightline function, and although its workability was doubted, it was chosen as an initial model for its simplicity. The results of this approach are shown for the sample protocols in Figure 2. The fit to the data is quite good in many instances. The intercept provides the critical index -- the value of the linear function in the spring of sixth grade provides an estimate of the child's "true" percentile ranking, based upon all of the available information from the standardized test scores, and taking into account the presence of trends in performance over time. To be sure, spring test scores for the sixth grade students are available. However, the linear estimate makes full use of all data, and allows the estimation of comparable values for students who have not yet reached the end of the sixth grade. The slope of the linear function

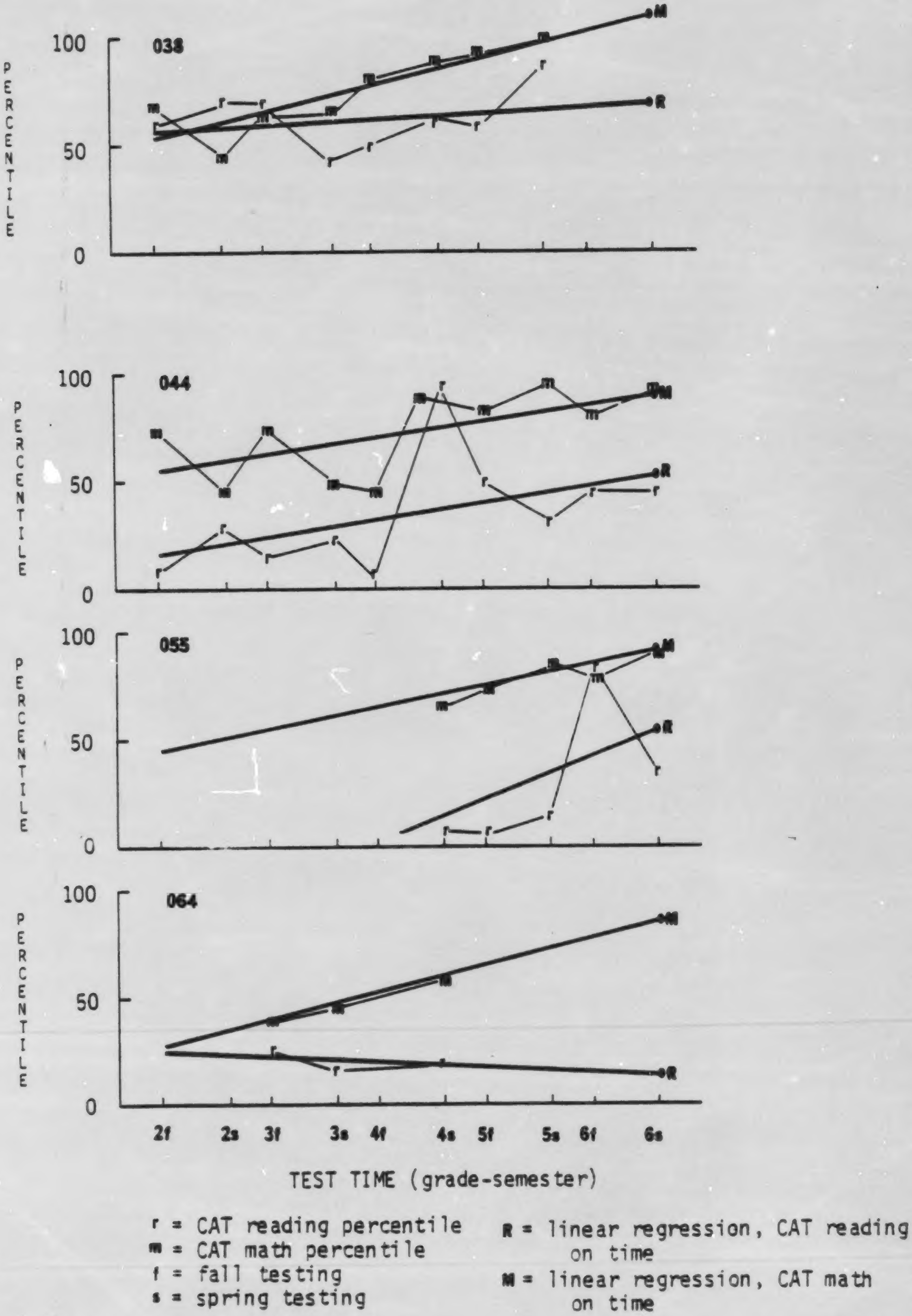

Figure 2. Plots of CAT reading and math percentiles for four students with best fitting regression line.

provides an estimate of the rate of change over time, and indicates whether the student is improving his or her percentile ranking, or is dropping in percentile ranking.

As can be seen from the examples, this approach works well in some instances, but it is quite unsatisfactory as a general solution to the problem. The most serious difficulty, visible in the scores for students 038 and 055, is that the index can easily exceed the allowable bounds; for student 038, the estimated percentile rank on exit from sixth grade is 110, while for student 055 the straight-line function predicts that the student should have scored in negative percentile ranges prior to third grade. This problem is not too serious for the sample protocols, but in a few instances, especially those where only two scores were available for estimation, extreme predictions were obtained (percentiles of 300 or above, especially for mathematics).

The second most serious difficulty is that the patterns of change are not really straightline functions. The top panel in Figure 3 more accurately represents the character of the (positive) changes that are likely to occur with percentile scores. Because the scores are strictly bounded between 0 and 100, the change function is most likely to take an ogival form, which becomes more noticeable at the faster rates of change. (The changes in Figure 3 are for the case of improvement in performance; a similar argument holds when performance is deteriorating for some reason.) There are a number of mathematical functions that have an ogival shape (Cohen & Cohen, 1975); for the present analysis, we chose the logit function because of its mathematical tractability. The logit function is a nonlinear transformation of a percentile or a proportion; more specifically, it is the logarithm of the odds ratio:

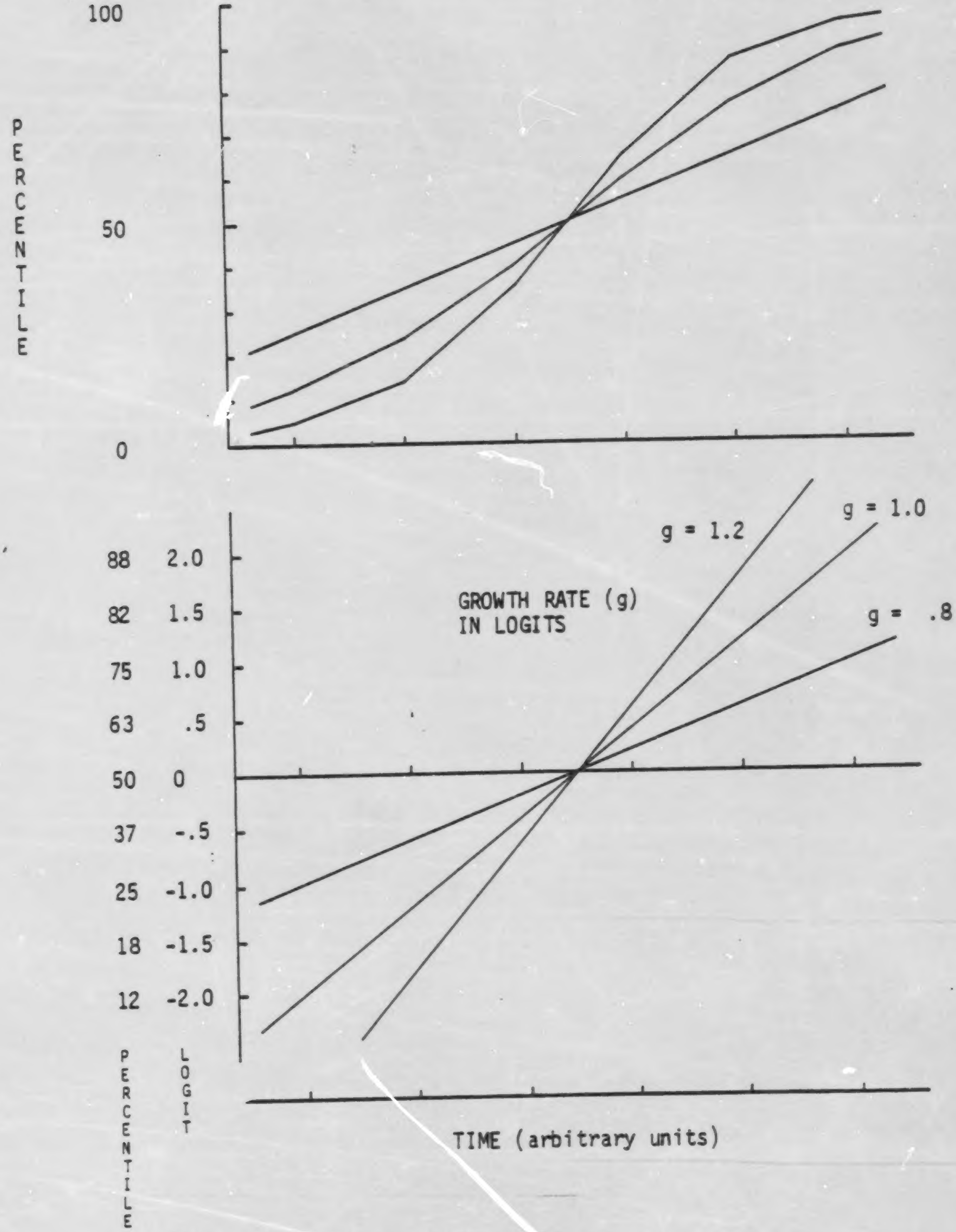

Figure 3. Plots of hypothesized growth functions, in percentile and logit values.

$L = \ln (p / (1-p))$

The growth functions in Figure 3 are actually drawn from the logit functions in the bottom panel, showing that if growth is linear over time in the logit function, the percentile change will be ogival in form. It should be noted that between the percentile values of 25 and 75, the logit is virtually a linear function of the percentiles; the "curve" in the function takes place for the more extreme values on the percentile range.

We adopted the logit function as the third model of change. The analysis of the data entailed converting the percentiles to logits for each student, fitting a straight line to the logits, thereby estimating the slope and intercept of the growth function, and then taking the inverse of the logit estimates. The slope values, while of interest for other purposes, are not germane to the goals of the present study, and will not be discussed in any detail.

The estimation procedure will be illustrated by the four protocols discussed earlier. In Figure 4, these protocols have been replotted using a logit scale. The logit scale has a centerpoint of 0, corresponding to the 50th percentile, and positive and negative values above and below the centerpoint. Straightline functions have been fitted to each of the plots. The slope is the rate of change, mostly determined by the distance between extreme percentile values, if such exist in the data. The intercept at the exit point from sixth grade provides a value from which percentile ranking at that time can be determined -- this estimate is the logarithm of the odds ratio, and uninformative except to those familiar with logarithms. It can be shown by a relatively simple mathematical proof that the percentile value, P,

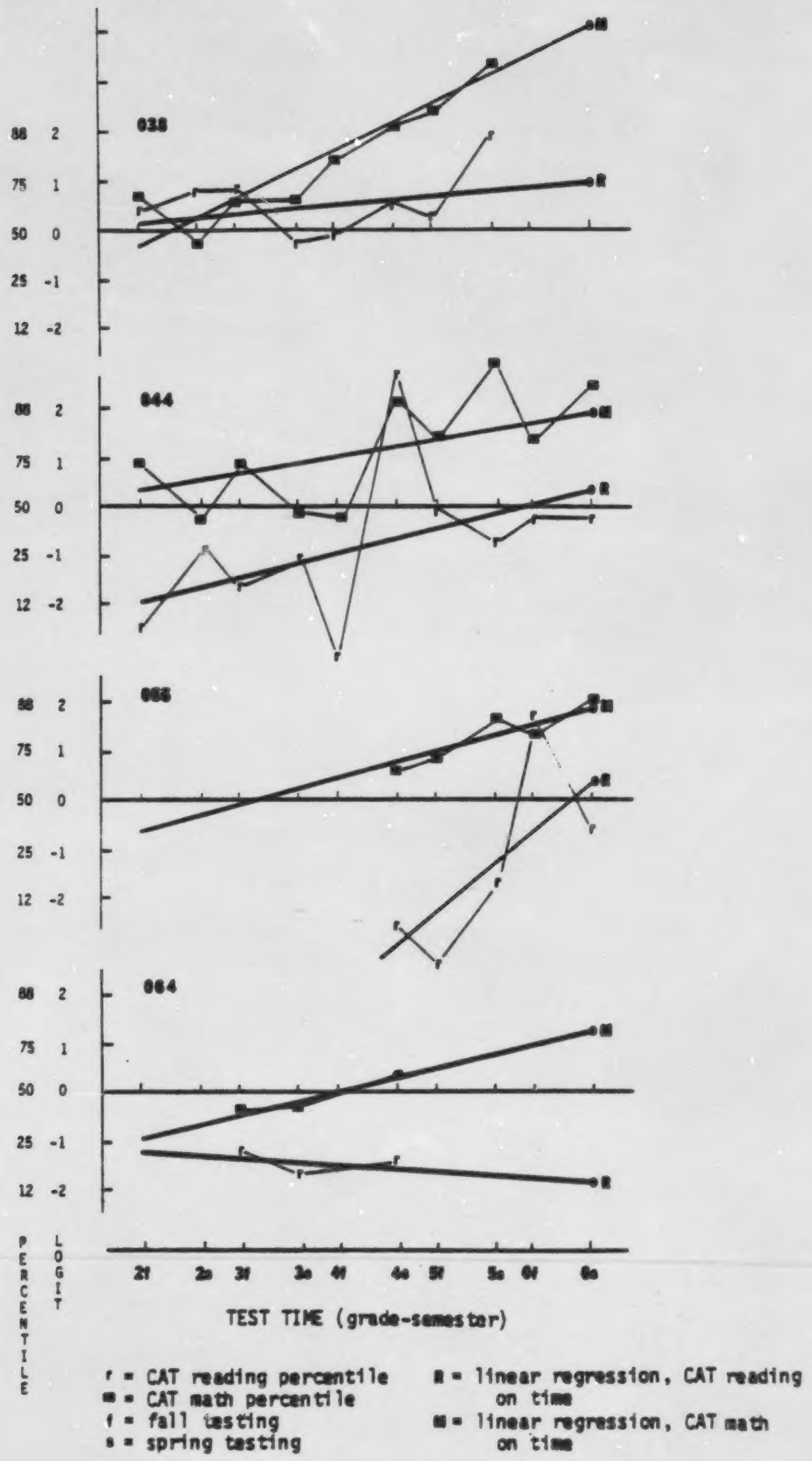

Figure 4. Plots of CAT reading and math logit values for four students with best fitting regression line.

can be obtained from the logit by the formula,

$$P = (e^L / (e^L + 1)) * 100$$

For instance, the logit intercept at sixth grade for student 038 equals 4.0; $e^{4.0}$ equals 55; and so the percentile corresponding to the logit of 4.0 is (55 / (55 + 1)) * 100, which equals 98.0. If you compare this estimate with the one derived from the linear model in Figure 3, you will see that both estimates are high, but the linear model gives an out-of-bound estimate of 110. The most attractive feature of the logit model is that the estimates will never go out of bounds -- the predictions for achievement percentiles always fall between 0 and 100, as they should. The estimates from the linear and logit models are actually quite similar for many of the cases, as can be seen in Figure 5, which shows a scatterplot for the reading scores (the mathematics scores behave quite similarly). The logit function generates estimates that remain in bounds (the relationship is "curved" at the ends of the scatterplot), but note that the logit estimates tend to be more extreme when only a few test scores are available for analysis (the cluster of points to the right and below the main body of the data).

The selection of the logit model did not remedy all of the problems evident in the standardized scores. Random fluctuations, variations due to changes in test level or repeated testing with the same test, and changes in test, are all reflected in the logit function as well as in the linear function. In addition, nonmonotonic trends in performance are problematic for either of the models in the simple form being employed here. For instance, there is evidence in some of the reading protocols that students benefit from the instructional program in the early primary years, but then undergo a relative decline in the later elementary grades -- the tendency first to

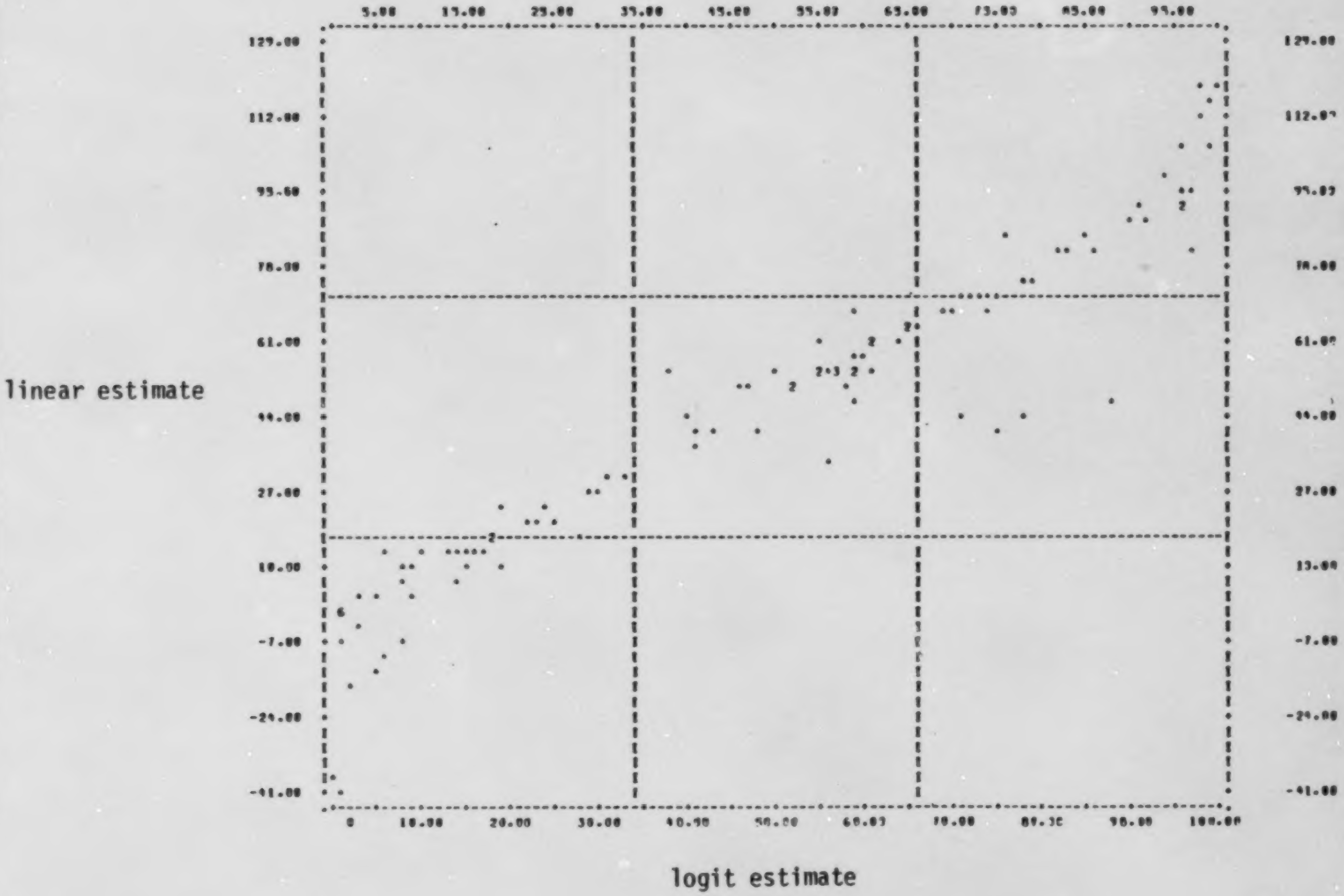

Figure 5. Scatterplot of linear and logit estimates of sixth grade CAT reading exit scores.

improve and then to fall back requires a more complex multiparameter model.

Finally, fluctuations in the amount of standardized test information affected the stability of the estimates. For a few students in the target population, no standardized test scores had been collected (N = 4), or only partial test data were available. These students were not included in the analyses. Other students were tested only twice, which provides the absolute minimum for analysis; 12 students fell into this category in the upper-grade sample. The largest proportion of the students had test scores at three or more time intervals (mean = 5.7, S.D. = 2.7), which provided a reasonably adequate basis for estimating the parameters of the model -- if some of the test scores fell within the midrange of performance, as was generally but not always the case. In short, there were many pitfalls in this relatively mundane data source, but we think that the exit estimates represent a reasonably accurate estimate of percentile rank on standardized instruments, and we used these estimates in our subsequent regression analyses.

In summary, the following measures of English literacy skills were created: reading (*IRAS-E* and *CAT-Reading*), writing (*IWI*), and formal oral langauge ability (Discourse and Grammar). In addition, a measure of mathematics ability (*CAT-Math*) and a language independent factor (Interactional Style) were derived. Cantonese reading ability was indexed via the *IRAS-C* measure. Table 14 presents the correlations between these measures (the *CAT* predictions have not been tabled since they represent estimates at the end of sixth grade while the others are values taken at the end of three different grade levels).

INDEPENDENT MEASURES

TABLE 14
Dependent Measures:
Correlations Among Measures for Fourth through Sixth Grade Sample (N = 112)

Scale	1	2	3	4	5	6
1. Interactive Reading Assessment System-English	-	.79	.67	.70	.50	-.20
2. Informal Writing Inventory		-	.64	.72	.46	-.27
3. Formal Language: Discourse			-	.74	.58	-.30
4. Grammar				-	.47	-.43
5. Interactional Style					-	-.21
6. Interactive Reading Assessment System-Cantonese						-

Note: All Pearson correlation coefficients are significantly different from 0 at $p \leq .03$

As can be seen in the general research questions presented in the introductory remarks above, the main independent variables of interest for this study centered around (1) the linguistic resources the students brought to the instructional programs they received, and (2) the instructional programs themselves. Below, the specific measures of these variables of interest are presented in detail. What is discussed are the "raw" predictors -- the information sources used to create variables for inclusion in the prediction of English literacy skill. The translation of these measures into the design structure is the focus of the section following this discussion.

Parent Interview

One of the precursor variables of interest in the study was the linguistic resources the child brought to school (i.e., relative bilingualism). Since the study was historical in nature, there were limits in the way the assessment of preschool linguistic resources could be approached. It was decided that interviewing parents about their childs' linguistic interactions prior to school would provide an adequate data source. Being suspicious of asking each parent to rate their childs' language abilities in English and Cantonese prior to school entry, parents were instead asked to describe what the relative usage of English and Cantonese was among various people present during the childs' preschool years. Under the assumption that the students were all normal (we have no evidence that any of them were language limited), exposure to English (versus Cantonese) should be a fairly good estimate of the students' ability in English relative to his ability in Cantonese.

Procedure

The interview was conducted in person in the Fall of 1981 by one of two interviewers, both well known within the Cantonese site community. Both were trained by a SEDL staff member over a one week period. One interviewer was bilingual, the other, Cantonese dominant. All interviews were conducted in the preferred language of the interviewee, most chosing Cantonese. Although questions other than those related to the students' linguistic resources were asked of the parents, their relevance to the current analysis was limited -- for a full description of these parts of the interview and descriptive data based on the Cantonese sample, see Mace-Matluck, Hoover, Lu, and Dong (1982).

Concerning the students' linguistic resources, each parent was asked to rate the relative amounts of English and Cantonese spoken by the target student to each of the following people prior to school entry: father, mother, grandparents, other adults living at home, siblings, and peers. Each was also asked the relative amount of English and Cantonese spoken by these individuals to the target student prior to school entry. Similarly, the same questions were asked about the linguistic interactions taking place among the same sets of people currently.

For each set of interactions, the interviewee was asked how much of the time Cantonese was used by the student with the individual of interest (or vice versa), and responded by selecting one of five ordered categories.

Scoring and Reliability

From these categories, a scale score of the relative amount of English usage was created for each interaction based on the following correspondence:

Response Category	Assigned Scale Value
Cantonese all of the time, never English	1
Cantonese most of the time, sometimes English	2
Equal usage of both Cantonese and English	3

Cantonese very little of the time, mostly English	3
Never Cantonese, always English	3

For the ratings based on preschool experience, two scales were created, one based upon the interactions of adults with the target student, and a second based upon the interactions of siblings and peers with the target student. The individual items (8 in the first scale and 4 in the second scale) were entered into a reliability analysis (see Table 15 for descriptive statistics), and the obtained coefficients (Cronbach's alpha) were .93 and .95, respectively. Similarly, two scales for current English usage interactions with the same set of individuals were computed. These were also subjected to reliability analyses, and the obtained coefficients were .91 and .92, for the adult and non-adult interactions, respectively. These high reliability coefficients and the equality of the item means within scales argue for a consistent pattern of linguistic usage among the relevant set of individuals.

Summary Measures and Descriptive Statistics

Based on the above results, four values were created, averaging items for the adult and non-adult interactions, respectively, in preschool and current time frames. The descriptive statistics for these scale values and their intercorrelations are presented in Table 16. Note that in the aggregate the language of the student-adult interactions tended over time toward more English, but not nearly as markedly as did the interactions with peers or siblings.

The next step involved creating a preschool English exposure measure by averaging the two preschool measures, adult and non-adult. Here the adult

TABLE 15
Parent Interviews: Reliability Analysis on English Exposure Scale Scores for Second through Sixth Grade Sample (N = 146)

Scale		Items	Mean Item Total	SD	α
Preschool English Exposure:	Adult	8	9.3	3.3	.93
	Peer	4	5.6	2.9	.95
Current English Exposure:	Adult	8	12.8	4.8	.91
	Peer	4	10.4	2.3	.92

TABLE 16
Parent Interview:
Descriptive Statistics and Correlations for English Exposure Scale Scores for Second through Sixth Grade Sample (N = 146)

Scale	Mean	SD	Correlations: 1	2	3	4
1. Preschool English Exposure: Adult	1.2	.41	-	.58	.54	.21
2. Preschool English Exposure: Peer	1.4	.72		-	.54	.30
3. Current English Exposure: Adult	1.6	.60			-	.48
4. Current English Exposure: Peer	2.6	.58				-

measure was doubly weighted relative to the peer/sibling measure, the rationale being that adult language was probably more critical in initial language acquisition than that of siblings. A current English exposure measure was also created by taking the simple average of the current English adult and non-adult exposure measures.

Since the responses the adult interviewees gave were most likely based on their recollections of the informal linguistic interactions between the individuals of interest, these scale values most likely characterize the students' relative English exposure received outside the classroom (i.e., usage of "natural" language).

Instruction

The key instructional variable of interest was the students' exposure to L1 and L2 literacy training. Recall that the Cantonese site offered two distinct instructional constrasts, one based on foreign schooling and one based on USA schooling. Below the derivation of the relevant instructional variables is discussed.

L1 Literacy Training

For relatively recent Cantonese-speaking immigrants, their schooling had consisted of initial exclusive L1 literacy training in their country of birth followed by exclusive L2 literacy training in the Cantonese site schools (a sequenced L1-L2 instructional program). For older USA born and relatively early-arriving immigrants, their schooling had consisted of simultaneous L1 and L2 literacy instruction (L1 literacy programs being offered in various schools at the Cantonese site at various times from 1975-76 through 1978-79), followed by exclusive L2 literacy instruction -- a simultaneous L1+L2 instructional program.

Students in the study who had received literacy training exclusively in L1 prior to coming to the United States attended Chinese language schools in either Hong Kong or Vietnam, with the exception of a few students who were previously schooled in the Peoples Republic of China. A brief description of typical schooling in those areas follows,

Sequential L1-L2 Program. Elementary school students in Hong Kong attend school approximately four hours per day. Instruction is offered daily in six to seven subject areas which correspond roughly to those included in the elementary curriculum in the United States (L1 Language Arts, Math, English as a Foreign Language, Physical Education, Music, Social Studies, Science, Health, Art). One teacher is responsible for all instruction for approximately 40 students. Typically, this instruction is provided through direct teaching involving the full group. Literacy training in Chinese is provided within a Total Language Arts approach (i.e., the teaching of reading, character writing, composition, and oral language development are integrated and included within a single subject matter block). Reading instruction is often presented through a modelling procedure in which the teacher first reads through the target passage once or twice while the students listen and view the material. Next, individual students are asked to read the passage aloud. The teacher interrupts this process to explain the meaning of characters or phrases as needed. Instructional materials for reading are typically passages written on the chalkboard or are contained in a reading textbook, deemed to be appropriate for the grade level of the students. All children in a particular class are instructed with the same textbook. Seldom are flashcards and other such material used, nor are supplementary or library books commonly used in the classroom instruction. Three subject areas receive the primary emphasis in the elementary classroom: Chinese Language Arts, Math, and English as a Foreign Language. English instruction (approximately 30 minutes per day) focuses heavily on grammatical structures and the written aspects of the language. Seldom do students in these schools develop fluency in speaking English to any great extent.

In the Chinese Language Schools in Vietnam, elementary students attend school approximately seven hours per day. Class periods are 45 minutes long with a 15 minute recess between classes. There is a 2 hour lunch break at which time the children go home. Instruction is offered daily in basic subject areas (i.e., Chinese Language Arts, Vietnamese as a Second Language, Social Studies, Math, and Science). Other subjects (e.g., Physical Education, Music, Abacus, Art, Dictation, Handcrafts) are provided once a week. The students also attend a weekly assembly in which the focus is on moral training and school discipline. All instruction, except the Vietnamese classes, is carried out in Chinese. The students are assigned homework daily, particularly in character writing and math. The consequences are significant if homework is not completed and turned in daily. One teacher is responsible for all instruction in a particualar class. Typically, this instruction is provided through direct teaching involving the full group. Literacy training in Chinese is quite similar to that provided in the Hong Kong schools. It is characterized by much modelling, rote learning, and drill.

Simultaneous L1+L2 Program. The L1 literacy programs offered in the Cantonese site consisted of a daily 30 minute period devoted to instruction in reading and writing in Chinese (see the Asian site descriptive study report for a detailed description of the programs offered during this period). This was additional instruction beyond the L2 literacy instruction provided for all students.

Coding. As mentioned earlier, during sample selection, a complete yearly instructional program history was constructed for each potential target student based on langauge proficiency, school attended, and year in school. After target selection was complete, target student parents were contacted, and in-depth parent interviews with each were conducted, partly to obtain information about previous schooling. All target students were also interviewed about their schooling history, as was each teacher who was still teaching in the Cantonese site schools who instructed any of the target students in previous years (see Appendix B for copies of these interviews). Employing data gathered from these parent, student, and teacher interviews, the yearly program assignments each target student received were updated, these previously having been based on proficiency test scores and previous school/grade assignments. For each student's record, the number of semesters of the relevant L1 literacy training program received (semesters of sequential L1-L2 or simultaneous L1+L2), was summed.

L2 Literacy Training

Previous work in the area of second language acquisition has shown that length of residence (LOR) in the L2-speaking country is a powerful predictor of attained L2 academic proficiency (Cummins, et al., 1981). The explanation for the effect has been that LOR is a proxy variable for exposure to L2, which is the critical variable. Given the argument that academic proficiency in L2 is supported by exposure to L2 formal language rather than exposure to L2 natural language, we determined the number of semesters of formal schooling each student received in L2. For students receiving the simultaneous L1+L2 program provided by the Cantonese site school district, each such semester received also entered into the sum of the number of semesters of L2 training received, since the L1 component was an additional offering beyond the normal L2 program.

DESIGN

In the sections below, the motivation for the design structure of the study and the procedures used in deriving it are discussed. The definition of the specific contrasts used in the regression analyses are also presented.

Rationale

The study was designed as a retrospective study since the questions of interest concerned the effects of instruction taking place over a relatively long period of time, but neither funding nor time allowed a longitudinal study to be conducted. This of course places certain limitations upon the interpretation of the results given that direct measurement of certain critical factors was not possible. Further, the study was not a true experiment -- we could not define instructional programs and randomly assign students to them. Again, this also places limitations on the interpretability of the data.

The goals of a true experiement, however, were kept in mind in striving for a close approximation to an orthogonal design. This was done in order to avoid the threat of a weak collinear solution in the regression analyses brought about by a general confounding of the key factors. A number of methods were employed in attacking this problem.

First, our preliminary analysis of the Cantonese site district revealed a much more reasonable degree of independence among factors relative to the other sites reviewed. Second, we sought equal representation of students within the various cells of the design since unproportional sample sizes result in nonorthogonal factors. As mentioned earlier, an inverse sampling technique was employed in selecting target students in trying to achieve this. Initially, a larger sample than needed was drawn, the distribution of this sample over the factors of interest (as preliminarily defined) was analyzed, and then proportionately fewer individuals in those over represented cells and proportionately more individuals in those under represented cells were randomly selected. Note that this procedure compromised the generalizability of the design to the original population because of the unequal sampling ratios, but since the main thrust of the study was the estimation of treatment effects, this issue was not critical.

The third procedure used to enhance the orthogonality of the design structure was to nest certain contrasts within others. A factor A is nested in a second factor B if each level (or category) of A occurs in exactly one level of factor B. In opposition, a factor A is crossed with a second factor B if every level of A occurs in every level of B.

To illustrate the advantages of nesting, consider the following. The preschool linguistic resources of the students educated in the simultaneous L1+L2 program tended to show mixtures of skill in both Cantonese and English (since they had been in the United States for 1 to 5 years prior to beginning school), while the students receiving the sequenced L1-L2 program, tended to be monolingual Cantonese speakers (given that most of them had no exposure to English in their non-USA country of birth). Accordingly, the initial linguistic resources of the students were confounded with instructional program, and in order to eliminate this confounding, we nested this linguistic resource variable within the program of instruction. The nesting was carried out by (1) dividing the students into two groups based on instructional program, thus creating the two nesting levels, (2) finding the mean of the preschool linguistic resource measure for each group, (3) within each group, subtracting the group mean from each individual's score (thus yielding a mean value of 0 for the entire group), and (4) within each nested variable, assigning a value of 0 to each student on the corresponding variable nested within the other level of the nesting factor (program of instruction).

These methods all contributed to the building of an orthogonal design structure. A discussion of the success of the approach will be presented following the description of the created predictive contrasts.

Predictive Contrasts

The following describes the contrasts created and used as independent measures in the regression analyses reported in the next section. First, the main contrasts will be treated, and then the defined interactions.

Main Effects

Eight main contrasts were defined, two crossed (program of instruction and gender), and six nested (preschool exposure to English, age, current exposure to English, amount of L2 literacy training, amount of L1 literacy training, and Chinese reading proficiency). Two levels within each of the crossed factors were defined, each with a -1 and +1 representation. For values nested within factors, each was centered around zero by subtracting the group mean from the individual scores within the approriate group. Thus, the nested predictor values are deviation scores and not the original scale scores (although the values are on the same scale of measurement).

In Table 17, each of the contrasts is listed along with the respective group mean used in standardization and the number of subjects falling above and below this value. The definition of each of these main contrasts is detailed below.

Program of instruction. This variable divided the sample of 112 fourth through sixth grade students into two groups: (1) those immigrant students who were first schooled in their country of birth prior to schooling in the United States, and thus received a sequenced L1-L2 instructional program, and (2) those students (some immigrants and some United States born) who received all of their schooling in the United States, and some of it in the simultaneous L1+L2 literacy program offered in the Cantonese site schools. The group sizes for these were 46 and 66, respectively. The contrast was defined by assigning -1 to the sequential L1-L2 instructional group, and +1 to the simultaneous L1+L2 group.

Gender. This variable was crossed with the program of instruction variable, and divided the students into females (assigned a value of -1) and males (assigned a value of +1). The group sizes were 44 and 68, respectively.

The following six variables were nested within instructional program, with negative deviation scores representing values below the group mean and positive deviation scores representing values above the group mean.

Preschool exposure to English. This variable was derived from the Parent Interview as discussed above.

TABLE 17
Independent Measures:
Definition, Coding and Descriptive Statistics

Predictor	Type	Level of Nesting Variable	Group Mean Prior to Standardization	Levels of Variable	Direction of Coding	Frequency
Program	Crossed	--	--	Sequenced L1 L2	-	46
			--	Simultaneous L1+L2	+	66
Gender	Crossed	--	--	Female	-	44
			--	Male	+	68
Preschool English	Nested	Sequenced L1+L2	1.0	Below Mean	-	42
				Above Mean	+	4
		Simultaneous L1+L2	1.4	Below Mean	-	45
				Above Mean	+	21
Age	Nested	Sequenced L1+L2	11.6	Below Mean	-	20
				Above Mean	+	26
		Simultaneous L1+L2	11.0	Below Mean	-	34
				Above Mean	+	32
Current English	Nested	Sequenced L1+L2	1.7	Below Mean	-	19
				Above Mean	+	27
		Simultaneous L1+L2	2.4	Below Mean	-	31
				Above Mean	+	35
Amount of L2	Nested	Sequenced L1+L2	5.4	Below Mean	-	22
				Above Mean	+	24
		Simultaneous L1+L2	11.4	Below Mean	-	27
				Above Mean	+	39
Amount of L1	Nested	Sequenced L1+L2	5.2	Below Mean	-	26
				Above Mean	+	20
		Simultaneous L1+L2	4.7	Below Mean	-	30
				Above Mean	+	36
Cantonese Reading	Nested	Sequenced L1+L2	3.3	Below Mean	-	25
				Above Mean	+	21
		Simultaneous L1+L2	1.7	Below Mean	-	35
				Above Mean	+	31
Gender by Program	Interaction	--	--	Female: Sequenced L1+L2	+	12
			--	Simultaneous L1+L2	-	32
			--	Male: Sequenced L1+L2	-	34
			--	Simultaneous L1+L2	+	34

Age. This variable was simply the students' age at the time of our literacy assessments (May, 1982).

Current exposure to English. Like the preschool exposure measure, this variable was derived from the Parent Interview discussed above.

Amount of L2 literacy training. For each of the two instructional groups, this variable represented the number of semesters of USA schooling where L2 literacy training was offered.

Amount of L1 literacy training. For those in the sequenced L1-L2 program, it was the number of semesters of exclusive L1 training received prior to entering a United States school. For those in the simultaneous L1+L2 program, this variable was the number of semesters each student was enrolled in the Cantonese site program when L1 literacy was offered in addition to L2 literacy training.

Cantonese reading proficiency. Recall that each target student's Cantonese reading proficiency had been assessed using the IRAS-C, with a single summary measure derived to characterize their performance. For one of the analyses reported below, this measure was regressed on the independent measures described above. However, for the remaining regressions, the measure was used as an additional predictor beyond instruction in L1.

Interactions

A single interaction, gender by program of instruction, was defined. Given that the two variables were crossed and each contained two levels (which were assigned values of -1 and +1, respectively), the interaction could be defined simply by multiplying for each student the respective values on these two variables. This contrast allowed the assessment of whether the effects of gender were the same under the two programs of instruction.

No interactions were defined for the nested variables for two reasons. First, in most cases the values nested are not comparable given that they represent deviations from substantially different group means (one of the reasons for nesting the variables). Second, in the case of the amount of L1 literacy training, receiving comparable numbers of semesters under the two programs do not represent comparable amounts of time devoted to Cantonese (i.e., the entire school day for those students in the sequential L1-L2 program versus 30 minutes per day for those students in the simultaneous L1+L2 program).

Orthogonality of Factors

The orthogonality of the design may be assessed by looking at the pattern of correlations among the independent measures discussed above. The relevant correlation matrix is presented in Table 18. As can be seen, only two variables show serious confounding. The amount of L1 and L2 training for students in the simultaneous L1+L2 program show approximately 60% shared variance (expected since the L1 literacy program was a component added to L2 literacy training). Second, the English exposure measures for the same instructional group share about 30% of their respective variances. This confounding simply suggests that the relative positioning of students with respect to English exposure from preschool to present remained fairly stable.

TABLE 18
Independent Measures:
Correlations Among Measures for Fourth through Sixth Grade Sample (N = 112)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Program of Instruction	-	-.23	.25	-.00	.00	-.00	.00	-.00	.00	.00	.00	.00	.00	-.00	.00
2. Gender		-	.23	-.01	-.03	.02	-.04	-.10	.07	.14	.08	-.04	.06	.07	-.19
3. Gender by Program Interaction			-	.01	-.03	-.02	-.04	.10	.07	-.14	.08	.04	.06	-.07	-.18
4. Preschool English Exposure (L1→L2)				-	-.00	.08	-.00	.32	-.00	-.05	-.00	-.04	-.00	.14	-.00
5. Preschool English Exposure (L1+L2)					-	-.00	.13	-.00	.56	.00	.21	.00	.04	-.00	-.14
6. Age (L1→L2)						-	-.00	.08	-.00	.05	-.00	.52	-.00	.31	-.00
7. Age (L1+L2)							-	-.00	.19	.00	.75	.00	.61	-.00	.22
8. Current English Exposure (L1→L2)								-	-.00	.20	-.00	-.10	-.00	-.16	-.00
9. Current English Exposure (L1+L2)									-	.00	.36	.00	.15	-.00	-.25
10. Amount of L2 Training (L1→L2)										-	.00	-.38	.00	-.11	.00
11. Amount of L2 Training (L1+L2)											-	.00	.77	-.00	-.06
12. Amount of L1 Training (L1→L2)												-	.00	.40	.00
13. Amount of L1 Training (L1+L2)													-	-.00	-.01
14. Cantonese Reading Proficiency (L1→L2)														-	-.00
15. Cantonese Reading Proficiency (L1+L2)															-

Note: Single underline indicates variables with 10-25% shared variance; double underline indicates variables with more than 25% shared variance.

RESULTS

The analysis of the variables of interest centered on the use of stepwise regression. In this section, the results of eight such analyses are presented in which each of the main dependent variables are regressed: IRAS-E, IWI, CAT-Reading, CAT-Math, Formal Language: Discourse, Grammar, and Interactional Style, and IRAS-C. Table 19 presents the first order correlations between the dependent and independent measures, which will be useful in interpreting the regression results. The regressions themselves were carried out in a similar manner, and the results are presented in Tables 20 through 27 for the eight analyses, respectively. Before turning to the specific analyses, the general structure of the regression tables will be explained.

In the first column of each table, the predictor variables are listed. They are organized according to their inclusion level: variables associated with lower numbered levels were those that were allowed to enter the equation first. The choice of level partly depended upon our knowledge of the magnitude of the correlations between the predictors. However, given that a relatively orthogonal design structure had been defined, the order of inclusion was not as important as it might have been had the predictor variables been highly intercorrelated.

The variables at each inclusion level were entered as follows. First, the program of instruction was entered, which divided the students into those who received the sequential L1-L2 literacy program and those who received the simultaneous L1+L2 literacy program. In the next level, the precursor measures of gender, the interaction of gender and program, and the preschool exposure measures (nested within the instructional program variable) were allowed to enter the equation. Next, the nested variables representing the

TABLE 19
Dependent and Independent Measures:
First Order Correlations Between Measures for Fourth through Sixth Grade Sample (N = 112)

			Predicted CAT at Sixth Grade Exit		Formal Language			
Independent Measure	IRAS-E	IWI	Reading	Math	Discourse	Grammar	Interaction	IRAS-C
1. Program of Instruction	.57	.54	.39	.08	.66	.67	.48	-.54
2. Gender	.02	-.15	-.08	.03	-.16	-.10	-.09	.08
3. Gender by Program Interaction	-.01	-.10	.10	-.26	.12	.14	.00	-.28
4. Preschool English Exposure (L1→L2)	.08	-.05	.09	.08	-.01	.01	-.03	.10
5. Preschool English Exposure (L1+L2)	.12	.18	.23	.12	.12	.23	.02	-.07
6. Age (L1→L2)	.03	.09	-.26	-.03	.00	-.13	.08	.22
7. Age (L1+L2)	.26	.32	.09	.02	.13	.21	.12	.10
8. Current English Exposure (L1→L2)	.13	.06	.17	.03	.16	.10	.13	-.11
9. Current English Exposure (L1+L2)	.16	.22	.31	.14	.22	.26	.12	-.12
10. Amount of L2 Training (L1→L2)	.36	.33	.32*	.09*	.18	.22	.29	-.07
11. Amount of L2 Training (L1+L2)	.28	.34	.25*	-.11*	.16	.35	.12	-.03
12. Amount of L1 Training (L1→L2)	.00	-.02	-.26	.05	-.07	-.14	.00	.28
13. Amount of L1 Training (L1+L2)	.24	.23	.05	-.14	.04	.23	.12	.00
14. Cantonese Reading Proficiency (L1→L2)	.11	.01	-.04	.16	.08	-.07	.09	-
15. Cantonese Reading Proficiency (L1+L2)	.06	.02	-.13	.00	.02	-.04	-.04	-

*These correlations are between the predicted CAT values at sixth grade exit and the amount of L2 training adjusted for current fourth and fifth graders to reflect the sixth grade exit point.

TABLE 20
Interactive Reading Assessment System - English: Summary Measure Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		1	.96	1.10	96.8
Inclusion Level 2					
Gender		3	.39	.29	6.1
Gender x Program		2	-.29	-.31	7.0
Preschool English:	L1→L2	5	2.72	2.41	1.4
	L1+L2	4	.45	.12	.2
Inclusion Level 3					
Age:	L1→L2	12	-.33	-.35	4.2
	L1+L2	6	.57	.16	.5
Current English:	L1→L2	7	1.08	.73	2.9
	L1+L2	8	.62	.50	1.2
Inclusion Level 4					
Amount of L2:	L1→L2	9	.40	.54	29.3
	L1+L2	10	.16	.19	4.0
Inclusion Level 5					
Amount of L1:	L1→L2	11	.18	.24	6.9
	L1+L2	-	-	-	-
Inclusion Level 6					
Cantonese Reading:	L1→L2	13	.15	.15	1.8
	L1+L2	14	.20	.20	1.6

Constant = 6.02
S.E. = 1.07
MS(E) = 1.13
df(E) = 97

$R = .80$
$R^2 = .64$

Note: F(1,120,.10) = 2.75; F(1,120,.05) = 3.92; F(1,120,.01) = 6.85.

TABLE 21
Informal Writing Inventory:
Summary Measure Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		1	.42	.46	80.7
Inclusion Level 2					
Gender		-	-	-	-
Gender x Program		2	-.19	-.18	10.8
Preschool English:	L1→L2	8	-1.24	-.62	.4
	L1+L2	3	.31	.10	.5
Inclusion Level 3					
Age:	L1→L2	6	.09	.02	.5
	L1+L2	4	.31	.13	1.7
Current English:	L1→L2	7	.21	.11	.3
	L1+L2	5	.42	.28	1.6
Inclusion Level 4					
Amount of L2:	L1→L2	9	.18	.20	18.5
	L1+L2	10	.09	.09	4.2
Inclusion Level 5					
Amount of L1:	L1→L2	11	.05	.05	1.4
	L1+L2	-	-	-	-
Inclusion Level 6					
Cantonese Reading:	L1→L2	-	-	-	-
	L1+L2	-	-	-	-

Constant = -.12
S.E. = .52
MS(E) = .27
df(E) = 100

R = .77
R^2 = .59

Note: F(1,120,.10) = 2.75; F(1,120,.05) = 3.92; F(1,120,.01) = 6.85.

TABLE 22
CAT Reading Scores:
Predicted Sixth Grade Exit Percentile Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		1	12.71	12.51	23.2
Inclusion Level 2					
Gender		-	-	-	-
Gender x Program		-	-	-	-
Preschool English:	L1→L2	3	53.22	59.40	1.7
	L1+L2	2	16.70	10.84	3.1
Inclusion Level 3					
Age:	L1→L2	4	-11.40	-4.71	1.1
	L1+L2	8	5.01	6.43	1.9
Current English:	L1→L2*				
	L1+L2*				
Inclusion Level 4					
Amount of L2:	L1→L2**	5	5.80	5.80	7.0
	L1+L2**	6	6.87	9.00	7.7
Inclusion Level 5					
Amount of L1:	L1→L2	-	-	-	-
	L1+L2	7	-1.70	-3.29	2.6
Inclusion Level 6					
Cantonese Reading:	L1→L2	-	-	-	-
	L1+L2	9	-4.36	-4.36	1.32

Constant = 45.85
S.E. = 26.46
MS(E) = 700.19
df(E) = 98

$R = .62$
$R^2 = .38$

Note: $F(1,120,.10) = 2.75$; $F(1,120,.05) = 3.92$; $F(1,120,.01) = 6.85$.

*These variables were not included since they could not be adjusted for the sixth grade exit point.

**These are adjusted values to reflect projected amount of L2 training at exit from sixth grade.

TABLE 23
CAT Math Scores:
Predicted Sixth Grade Exit Percentile Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		2	3.19	4.11	3.4
Inclusion Level 2					
Gender		3	3.41	3.44	2.3
Gender x Program		1	-5.81	-6.76	8.9
Preschool English:	L1→L2	-	-	-	-
	L1+L2	4	5.80	6.81	2.1
Inclusion Level 3					
Age:	L1→L2	-	-	-	-
	L1+L2	-	-	-	-
Current English:	L1→L2*				
	L1+L2*				
Inclusion Level 4					
Amount of L2:	L1→L2**	-	-	-	-
	L1+L2**	5	-2.43	-2.43	1.2
Inclusion Level 5					
Amount of L1:	L1→L2	-	-	-	-
	L1+L2	-	-	-	-
Inclusion Level 6					
Cantonese Reading:	L1→L2	6	2.69	2.69	1.8
	L1+L2	-	-	-	-

Constant = 79.65
S.E. = 21.20
MS(E) = 449.24
df(E) = 101

R = .38
R^2 = .14

Note: F(1,120,.10) = 2.75; F(1,120,.05) = 3.92; F(1,120,.01) = 6.85.

*These variables were not included since they could not be adjusted for the sixth grade exit point.

**These are adjusted values to reflect projected amount of L2 training at exit from sixth grade.

TABLE 24
Formal Language: Discourse Summary Measure Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		1	13.15	13.38	98.8
Inclusion Level 2					
Gender		-	-	-	-
Gender x Program		5	-1.67	-.93	.5
Preschool English:	L1→L2	9	-25.88	-25.88	1.0
	L1+L2	2	5.18	-.59	.3
Inclusion Level 3					
Age:	L1→L2	-	-	-	-
	L1+L2	6	2.37	2.41	1.8
Current English:	L1→L2	4	11.84	13.21	6.1
	L1+L2	3	15.27	14.66	6.9
Inclusion Level 4					
Amount of L2:	L1→L2	7	2.35	2.40	4.8
	L1+L2	-	-	-	-
Inclusion Level 5					
Amount of L1:	L1→L2	-	-	-	-
	L1+L2	-	-	-	-
Inclusion Level 6					
Cantonese Reading:	L1→L2	8	2.27	2.52	3.8
	L1+L2	-	-	-	-

Constant = 54.70
S.E. = 13.53
MS(E) = 183.03
df(E) = 102

$R = .75$
$R^2 = .56$

Note: F(1,120,.10) = 2.75; F(1,120,.05) = 3.92; F(1,120,.01) = 6.85.

TABLE 25
Formal Language:
Grammar Summary Measure Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		1	21.51	22.06	125.1
Inclusion Level 2					
Gender		4	2.32	.52	.1
Gender x Program		8	-2.37	-1.70	.7
Preschool English:	L1→L2	-	-	-	-
	L1+L2	2	16.64	8.61	3.1
Inclusion Level 3					
Age:	L1→L2	5	-5.57	-6.26	6.6
	L1+L2	3	7.92	-4.86	1.6
Current English:	L1→L2	7	14.72	10.00	2.0
	L1+L2	6	17.20	8.53	1.1
Inclusion Level 4					
Amount of L2:	L1→L2	10	5.29	5.29	11.6
	L1+L2	9	6.96	6.96	17.8
Inclusion Level 5					
Amount of L1:	L1→L2	-	-	-	-
	L1+L2	-	-	-	-
Inclusion Level 6					
Cantonese Reading:	L1→L2	-	-	-	-
	L1+L2	-	-	-	-

Constant = 51.73
S.E. = 18.77
MS(E) = 352.26
df(E) = 101

$R = .83$
$R^2 = .68$

Note: F(1,120,.10) = 2.75; F(1,120,.05) = 3.92; F(1,120,.01) = 6.85.

TABLE 26
Formal Language:
Interactional Style Summary Measure Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		1	13.11	13.76	37.8
Inclusion Level 2					
Gender		-	-	-	-
Gender x Program		2	-3.45	-2.56	1.24
Preschool English:	L1→L2	-	-	-	-
	L1+L2	-	-	-	-
Inclusion Level 3					
Age:	L1→L2	-	-	-	-
	L1+L2	5	3.36	3.47	1.3
Current English:	L1→L2	3	14.37	10.45	1.6
	L1+L2	4	12.18	10.12	1.7
Inclusion Level 4					
Amount of L2:	L1→L2	6	5.68	6.67	11.7
	L1+L2	-	-	-	-
Inclusion Level 5					
Amount of L1:	L1→L2	7	2.37	1.67	1.0
	L1+L2	-	-	-	-
Inclusion Level 6					
Cantonese Reading:	L1→L2	8	2.54	2.54	1.2
	L1+L2	-	-	-	-

Constant = 62.66
S.E. = 22.50
MS(E) = 506.20
df(E) = 103

$R = .61$
$R^2 = .37$

Note: F(1,120,.10) = 2.75; F(1,120,.05) = 3.92; F(1,120,.01) = 6.85.

TABLE 27
Interactive Reading Assessment System - Cantonese: Summary Measure Regressed on Program and Student Characteristics

Predictor		Step	B-Initial	B-Final	F-Ratio
Inclusion Level 1					
Program		1	-.82	-.77	46.6
Inclusion Level 2					
Gender		-	-	-	-
Gender x Program		2	-.23	-.17	2.2
Preschool English:	L1→L2	3	2.65	3.75	3.2
	L1+L2	-	-	-	-
Inclusion Level 3					
Age:	L1→L2	4	.42	.19	1.2
	L1+L2	7	.26	.50	4.8
Current English:	L1→L2	5	-.85	-.70	2.6
	L1+L2	6	-.61	-.53	1.6
Inclusion Level 4					
Amount of L2:	L1→L2	-	-	-	-
	L1+L2	8	-.15	-.14	2.1
Inclusion Level 5					
Amount of L1:	L1→L2	9	.22	.22	6.9
	L1+L2	-	-	-	-
Inclusion Level 6					
Cantonese Reading:	L1→L2*				
	L1+L2*				

Constant = 2.49
S.E. = 1.14
MS(E) = 1.30
df(E) = 102

$R = .68$
$R^2 = .46$

Note: F(1,120,.10) = 2.75; F(1,120,.05) = 3.92; F(1,120,.01) = 6.85.

*These variables were not entered in the regression as they are transforms of the IRAS-C score.

TABLE 28
Breakdown of Dependent Measures by Program and Gender

Program	Gender	N	IRAS-E	IWI	Predicted CAT Percentiles: Reading	Predicted CAT Percentiles: Math	Formal Language: Discourse	Formal Language: Grammar	Formal Language: Interactional Style	IRAS-C
Sequenced L1+L2										
	Female	12	4.0	-.85	33.6	64.4	40.3	25.0	41.7	3.0
			(1.6)	(.48)	(35.7)	(32.0)	(18.4)	(13.6)	(28.4)	(1.7)
	Male	34	5.6	-.37	32.8	86.3	42.3	32.8	53.1	3.5
			(1.5)	(.60)	(33.8)	(15.6)	(15.8)	(24.5)	(26.8)	(1.6)
Simultaneous L1+L2										
	Female	32	7.1	.51	58.0	87.9	69.0	73.0	78.6	1.9
			(1.2)	(.61)	(27.9)	(13.6)	(13.5)	(25.9)	(21.3)	(1.0)
	Male	34	7.1	.18	58.9	79.6	67.1	74.5	74.2	1.5
			(1.1)	(.71)	(25.9)	(27.1)	(13.8)	(23.6)	(21.7)	(0.8)

TABLE 29
Breakdown of Dependent Measures by Program, Amount of English Instruction, and Gender

Program	Amount of English Instruction (Semesters)	Gender	N	IRAS-E	IWI	Predicted CAT Percentiles: Reading	Predicted CAT Percentiles: Math	Formal Language: Discourse	Formal Language: Grammar	Formal Language: Interactional Style	IRAS-C
Sequenced L1+L2			46	5.2	-.49	33.0	80.3	41.8	30.7	50.1	3.3
	2-4		16	4.1	-1.00	17.5	76.9	38.8	22.7	42.7	3.7
		F	6	2.9	-1.16	34.2	58.1	40.1	22.9	33.3	3.9
		M	10	4.8	-.87	6.4	89.5	38.1	22.6	48.3	3.7
	5-6		20	5.4	-.33	39.9	80.0	38.3	29.7	45.8	3.0
		F	5	5.2	-.60	35.7	66.0	40.1	27.5	50.0	1.8
		M	15	5.5	-.24	41.3	85.0	37.4	30.4	44.4	3.4
	7-12		10	6.5	-.04	43.3	86.2	53.4	45.7	70.6	3.4
		F	1	4.7	-.20	19.0	94.3	38.1	25.0	50.0	3.8
		M	9	6.7	-.03	46.0	85.3	55.1	48.0	72.8	3.4
Simultaneous L1+L2			66	7.1	.34	58.4	83.8	68.1	73.8	76.3	1.7
	5-7		7	5.3	-.49	14.5	86.1	50.7	22.0	59.5	2.1
		F	5	5.4	-.27	12.6	92.5	54.2	24.2	63.3	2.3
		M	2	4.9	-1.03	24.2	53.9	42.0	16.7	50.0	1.7
	10		19	7.1	.19	70.8	86.6	70.5	80.8	77.2	1.6
		F	8	7.1	.26	76.0	93.9	71.9	82.6	85.4	1.8
		M	11	7.1	.14	66.7	80.7	69.4	79.4	71.2	1.5
	11-12		20	7.3	.47	58.3	84.9	71.9	75.3	78.9	1.6
		F	10	7.6	.85	71.1	91.6	74.1	78.8	88.3	1.5
		M	10	6.9	.09	45.5	78.1	69.7	71.8	69.4	1.6
	13-14		20	7.6	.64	60.6	79.4	68.0	83.7	78.9	1.8
		F	9	7.6	.81	52.7	75.9	69.0	85.2	70.4	2.4
		M	11	7.7	.51	67.0	82.4	67.1	82.4	85.9	1.3

TABLE 30

Breakdown of Dependent Measures by Program, Amount of Cantonese Instruction, and Gender

Program	Amount of Cantonese Instruction (Semesters)	Gender	N		IRAS-E		IWI		Predicted CAT Percentiles: Reading		Predicted CAT Percentiles: Math		Formal Language: Discourse		Formal Language: Grammar		Formal Language: Interactional Style		IRAS-C	
Sequenced L1+L2			46		5.2		-.49		33.0		80.3		41.8		30.7		50.1		3.3	
	2-3		9		6.1		-.13		40.9		85.8		51.3		46.3		63.6		2.3	
		F		0		-		-		-		-		-		-		-		-
		M		9		6.1		-.13		40.9		85.8		51.3		46.3		63.6		2.3
	4-5		17		4.7		-.69		39.1		78.2		39.0		30.4		41.2		3.1	
		F		5		4.3		-.88		31.3		73.6		41.8		30.6		40.0		3.2
		M		12		4.9		-.61		38.1		80.3		37.9		30.3		41.7		3.1
	6-8		17		5.1		-.51		18.9		77.0		39.2		22.6		50.7		3.8	
		F		7		3.9		-.82		6.6		57.8		39.2		21.0		42.9		2.9
		M		10		6.0		-.29		21.5		90.4		39.2		23.8		56.1		4.4
	10-12				5.7		-.36		7.5		96.1		43.1		31.9		57.4		5.1	
		F	3	0		-		-		-		-		-		-		-		-
		M		3		5.7		-.36		7.5		96.1		43.1		31.9		57.4		5.1
Simultaneous L1+L2			66		7.1		.34		58.4		83.8		68.1		73.8		76.3		1.7	
	0-2		14		6.2		-.01		49.4		90.0		65.8		57.0		67.1		1.9	
		F		7		6.0		.05		41.8		92.1		64.3		49.6		69.0		2.0
		M		7		6.4		-.06		60.1		87.1		67.3		64.5		65.1		1.7
	3-4		16		7.1		.18		67.5		84.5		68.5		79.0		74.0		1.7	
		F		8		7.1		.32		69.4		92.7		71.6		77.9		83.3		1.7
		M		8		7.1		.04		65.7		76.4		65.5		80.0		64.6		1.7
	5-6		23		7.4		.56		59.0		85.0		70.0		74.3		82.4		1.6	
		F		12		7.7		.82		65.7		90.0		71.0		78.4		87.5		1.8
		M		11		7.2		.27		51.6		79.6		68.9		69.8		76.8		1.4
	8		13		7.5		.53		54.6		74.9		66.5		84.4		78.6		1.8	
		F		5		7.5		.75		44.1		69.4		66.9		85.0		63.3		2.6
		M		8		7.6		.40		61.2		78.3		66.2		84.0		88.2		1.3

students' age (in terms of deviations from the group mean) were entered. These were followed by the nested variables specifying the students' current exposure to English. Next came the instructional variables: first, the nested variables for the amount of L2 literacy training received, then the nested variables for the amount of L1 literacy training. Finally, the nested variables representing the students' (relative) level of Cantonese reading proficiency were entered.

The next column in each table gives the step during which each variable entered the equation. Within a given inclusion level, the variables entered in different orders across the analyses depending upon the magnitude of their effects. It was required that the variance explained by any given variable exceed the variance due to error in order to enter the equation. However, values under the F-Ratio column may sometimes be smaller than 1 because occasionally, a variable entered the equation, but some of its effects were negated by a variable entering later, due to some collinearity in the factors. Also, sometimes variables at one inclusion level entered the equation after variables at a higher numbered (and thus later entered) inclusion level. This generally occurred when the magnitude of the effect of the variable was not sufficient when initially being considered, but came to exceed the F-ratio level after other variables entered and reduced the error variance.

The remaining two columns specify the B weights. The first gives the weight when the variable initially entered the equation, and the second gives the final weight after all variables had been considered. If the B weights remained fairly constant from initial to final values, this is an indication that the factors are relatively independent. If the values changed, then this is a sign that some of the variables are partly correlated. The B weights are most informative in relating the amount of change expected in the dependent variable for a given unit change in the predictor.

Before turning to each particular regression, note that in many cases (IRAS-E, IWI, Formal Language: Discourse and Grammar) the variables entered into the final solution accounted for approximately 60% of the variance in dependent measure performance. Given that no "pretest" measure had been entered, this represents a fairly remarkable fit to the data.

Interactive Reading Assessment System - English

The results of regressing the IRAS-E on the independent measures discussed above are presented in Table 20. The first variable to enter the equation was program of instruction, and it remained fairly stable from its intial entry to the final solution (B weights of .96 and 1.1, respectively), with a large final F-ratio. The next values to enter, again with fairly stable effects, were the variables of gender and its interaction with program. None of the preschool English exposure or current English exposure variables made significant contributions to IRAS-E performance. The age variables defined under each instructional group made initial significant contributions, but for the simultaneous L1+L2 group, the effects were reduced by other entered variables. The amounts of L2 literacy received under both groups, however, showed rather constant and large effects. The final variable entered was the amount of L1 training received by those students trained under the sequential L1-L2 literacy program.

The obtained B weight for the program of instruction variable was approximately +1. Given that the two groups defined under this variable were coded as -1 (the sequential L1-L2 program) and +1 (the simultaneous L1+L2 program), and that the IRAS-E scale approximated grade level units, this points out the significant two grade level difference between the two groups in favor of the simultaneous L1+L2 program. There are many differences between the two groups that may account for such a large effect. Noting the contrasts between the measures that were defined, and based upon the analyses reported in the literature, the amount of exposure to English seems to be a likely candidate.

The effect for gender (coded as -1 for females and +1 for males) reveals that overall, males showed an advantage over females in performance on the IRAS-E. More importantly, the significant gender by program interaction indicates that the gender difference was not constant over programs. The breakdown of the dependent measures by program and gender presented in Table 28, shows that males and females schooled under the simultaneous L1+L2 literacy program did equally well in the aggregrate on IRAS-E, but that males outperformed females in the sequential L1-L2 program (caution must be taken in this interpretation because of the unequal number of observations per cell).

The effect for age found in the sequential L1-L2 group shows a curious trend: IRAS-E performance declined by approximately a third of a grade level for each year of increase in student age. For the simultaneous L1+L2 instructional group, an initially significant effect appeared (showing about a half of a grade level improvement for each additional year in age), but it was negated when the amount of L2 literacy training was entered.

Recall that the scale on which the amounts of literacy training were defined was in semester units. Thus, the regression results suggest that for students trained under the sequential L1-L2 literacy progam, each additional semester of L2 literacy training resulted in about one half of a grade-level improvement in IRAS-E performance (see Table 29 for a breakdown of the dependent measures by program, amount of English instruction, and gender). For students in the simultaneous L1+L2 literacy program, each additional semester of L2 literacy training resulted in about one fifth of a grade-level improvement. As noted above, this variable is correlated with age, but the effect measured here is the contribution of L2 training on IRAS-E performance after the contribution of age has been removed. For those students trained in the sequential L1-L2 program, each additional semester of training in exclusive L1 resulted in about a quarter of a grade-level improvement in L2 reading skill (see Table 30 for a breakdown of the dependent measures by program, amount of Cantonese instruction, and gender).

Informal Writing Inventory

Turning to English writing skills, the results of the IWI regression are presented in Table 21. The first variable entered was the instructional program, and as in the IRAS-E analysis, its effects were stable and large. The gender variable did not show a significant main effect on IWI performance, but its interaction with program did. For those students schooled under the sequential L1-L2 program, the only additional variable predicting IWI performance was that of amount of L2 instruction. For those students schooled under the simultaneous L1+L2 program, age made an initial significant contribution, but was then reduced by the inclusion of the amount of L2 training variable, which showed a small stable effect.

The B weight associated with the program of instruction was approximately +.5, which means that the aggregate difference between programs on IWI performance was about one standard deviation unit (in favor of the simultaneous L1+L2 instructional group). The direction of the gender by program interaction can be seen in Table 28: for the sequential L1-L2 program, males outperformed females by about a half of a standard deviation unit, while in the simultaneous L1+L2 group, females were about a third of a standard deviation unit above males on IWI performance. For the sequential L1-L2 instructional group, IWI performance improved by approximately a fifth of a standard deviation unit for each additional semester of L2 training. For students in the other instructional group, the unique contribution of L2 training after the effects of age had been removed were about half that rate (i.e., about a tenth of a grade level improvement per semester).

CAT-Reading and Math

In the next two regression analyses, the CAT percentile scores predicted for each student at sixth grade exit were regressed using an adjusted set of predictors. First, the measure of current English exposure was dropped from these analyses since it could not be adjusted for the sixth grade exit point for the current fourth and fifth grade students. The amount of L2 literacy training was adjusted to reflect this exit point by simply adding 4 semesters to the current fourth grader L2 training amounts, and 2 semesters to the current fifth grader L2 training amounts. The results of the regression analyses for the CAT-Reading and CAT-Math scores are presented in Tables 22 and 23, respectively.

For the CAT-Reading predicted percentiles, only 38% of the variance in performance could be explained. The program of instruction variable showed a stable, and relatively large effect. Unlike the previous two analyses, no gender effect was indicated, either as a main effect or as an interaction with program. For the sequential L1-L2 group, age showed an initial effect which was greatly reduced when the adjusted amount of L2 training was entered. The latter, however, maintained a stable influence. For the simultaneous L1+L2 instructional group, preschool exposure to English revealed a relatively stable effect, as did the adjusted amount of L2 literacy training received.

The B weight associated with the instructional program variable is approximately +12, and reflects a significant 25 point difference between the two groups (in favor of the simultaneous L1+L2 group). The significant effect for preschool English exposure suggests that the more English exposure children in the simultaneous L1+L2 program had, the better their sixth grade predicted *CAT-Reading* percentiles were. For this same group, each additional semester of (adjusted) L2 training was associated with a gain of about 9 percentile points. For the sequential L1-L2 group, the same trend associated with L2 training appeared, but at about half the growth rate (i.e., 5 percentile points per semester of training).

For the *CAT-Math* predicted percentiles, only 14% of the variance in performance could be accounted for with the set of independent variables derived for predicting L2 literacy skills. As can be seen from Table 23, the program of instruction maintained a small but stable effect, with the simultaneous L1+L2 instructional group showing an advantage of approximately 8 percentile points in the aggregate. A significant gender by program interaction was the only other significant stable effect found. Again, from Table 28, it can be seen that males in the sequential L1-L2 program outperformed females, but in the simultaneous L1+L2 instructional program, females showed superior performance to males.

Formal Language: Discourse

Table 24 presents the results of the regression analysis for the Discourse measure derived from the Passage Retell formal language rating. As in the IRAS-E and IWI regressions, a relatively large percentage of the variance in performance was accounted for by the independent measures employed (approximately 56%).

The first variable entered, program of instruction, showed a stable and large effect. Since the Discourse measure was scaled in percents, the B weights obtained for this variable show an advantage of aproximately 25 percentage points for those students in the simultaneous L1+L2 instructional group. Neither the gender nor the gender by program interaction predicted performance in the Discourse measure. For the sequential L1-L2 instructional group, current English exposure made a stable contribution, as did the amount of L2 training. For the former, each unit increase on the 3 point exposure scale was associated with an increase of about 13 percentage points on the Discourse measure. The effect for L2 training shows an increase of about 5 percentage points for each additional year of L2 instruction. A marginal effect for Cantonese reading proficiency was also obtained for this group, and of about the same magnitude as the amount of L2 training: for each grade level increase in Chinese reading, there was an associated increase of 5 percentage points on the Discourse measure. For the simultaneous L1+L2 instructional group, an effect for the current English exposure variable was also found: each increase on the 3 point exposure scale was associated with an increase of about 15 percentage points on the Discourse measure.

Formal Language: Grammar

Table 25 presents the results of the regression analysis of the Grammar measure derived from the Student Interview. First, note that approximately

68% of the variance in performance on this measure was accounted for by the independent measures entered. Again, a large and stable effect for program was found, showing that in the aggregate, the performance of the simultaneous L1+L2 instructional group exceeded that of the sequential L1-L2 instructional group by about 40 percentage points. For the sequential L1-L2 instructional group, the measure of current English exposure had a significant initial effect, but this was eliminated by the amount of L2 training which showed a small but stable independent effect. For the simultaneous L1+L2 instructional group, the preschool English exposure measure made an initial significant contribution, but this was negated by the inclusion of the age variable. In turn, the effect of this variable was reduced by the inclusion of the current English exposure measure, which itself was reduced by the entry of the amount of L2 training. The latter variable, however, had a significant effect independent of the other variables: for each additional year of L2 instruction, performance increased on this measure by approximately 14 percentage points.

Formal Language: Interactional Style

In Table 26, the results of the regression analysis of the measure of Interactional Style are presented. Recall that this measure was derived from the Student Interview, and appeared to tap a nonlinguistic communication style. The overall success of the prediction was relatively low (37% explained variance).

The program of instruction showed a stable and large effect, indicating a significant 26 percentage point difference between the two groups. The only other variable which showed any predictive power was the amount of L2 training under the sequential L1-L2 group.

Interactive Reading Assessment System - Cantonese

Table 27 presents the regression analysis of Cantonese reading proficiency. Here, the amount of variance accounted for (46%) is greater than that found in the Interactional Style measure, but is somewhat less than that accounted for in the English academic measures.

Again, a large and stable instructional program effect was obtained, but in the opposite direction of those previously found. Students schooled under the sequential L1-L2 program maintained an approximate grade and a half level advantage over those students in the simultaneous L1+L2 program. The only significant effect found within the simultaneous L1+L2 instructional group was age, where an improvement of about a grade level in Cantonese reading proficiency was associated with each additional year. Within the sequential L1-L2 program, the age variable initially showed a significant effect, but this was reduced when the amount of L1 instruction was included. The latter maintained a significant independent effect, showing an improvement of approximately a half of a grade level for every year of instruction.

As stated in the introductory remarks, this report provides a preliminary description of the data analyses conducted under the Cantonese site analytic study. Given that these analyses have just been completed, we have not had the time needed to develop their interpretations or integration. As such, no attempt will be made here to provide this needed account, but it will be included in a forthcoming report.

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Appendix A

Formal Language Scales for Student Interview and Passage Retell

SEDL 2.18.82 Language and Literacy Learning in Bilingual Instruction

STUDENT INTERVIEW
Scoring Criteria and Rating-Scale

Name____________________ Grade_____ Date________________ School_________________________ Teacher______________________

1. PRONUNCIATION

0 hard to understand
1 not native-like, but intelligible
2 like native, except for 3-4 phonemes
3 like native, except for 1-2 phonemes
4 like native

2. INTERVIEWER SPEECH

0 tendency to paraphrase
1 slower and simplified
2 at normal rate and of normal complexity (with normal feedback)

3. PRODUCTION OF APPROPRIATE RESPONSES

0 many responses semantically inappropriate
1 a few responses inappropriate
2 all responses semantically appropriate (with normal feedback)

4. REQUEST FOR REPETITION

0 no response nor request for repetition (appears not to comprehend)
1 many requests for repetition
2 occasional request for repetition
3 responds to all questions or statements without request for repetition

5. RICHNESS OF INFORMATION COMMUNICATED

0 many answers incomplete, monosyllabic or unelaborated
1 answers adequately, with some detail
2 answers elaborately, with detail and specific vocabulary

6. INFLECTION OF VERBS AND NOUNS

0 many errors
1 occasional errors
2 no errors

7. ARTICLE, PREPOSITION, PRONOUN USE

0 many forms omitted or used superflously
1 a few omitted or used superflously
2 no errors of omission or superflous use

8. SYNTACTIC STRUCTURE SOPHISTICATION

0 generally non-standard use of simple syntax, few elaborated structures
1 few complex structures, many errors in simple syntax
2 uses few complex structures, few errors in simple syntax
3 uses some complex structures (and modals), makes few errors in simple syntax
4 native like use of syntactic structures

9. EASE

0 extremely reserved or shy
1 reserved but cooperative
2 clearly at ease

10. USE OF SOCIOLINGUISTICALLY APPROPRIATE FORM/STRUCTURE

0 many disjointed sentences and/or simple subordinate clauses; few, if any, well-formed declarative sentences
1 some disjointed sentences and/or single subordinate clauses; excessive use of "filler" words and connectors; a few well-formed declarative sentences
2 no disjointed sentences; some single subordinate clauses; occasional use of "filler" words and/or unnecessary connectors Some well-formed declarative sentences
3 prevalence of well-formed declarative sentences; some appropriate single subordinate clauses; few, if any, "filler" words and unnecessary connectors

PASSAGE RETELL
Scoring Criteria and Rating Scale

Name________________________Grade__________Date______________School____________________Teacher____________________IRAS Passage__________

11. PRONUNCIATION

0 hard to understand
1 not native-like, but intelligible
2 like native, except for 3-5 phonemes
3 like native, except for 1-2 phonemes
4 like native

12. INFLECTION OF VERBS AND NOUNS

0 many errors
1 occasional errors
2 no errors

13. ARTICLE, PREPOSITION, PRONOUN USE

0 many forms omitted and/or used superflously
1 a few omitted or used superflously
2 no errors of omission or superflous use

14. SEMANTIC APPROPRIATENESS

0 many utterances semantically inappropriate
1 a few responses semantically inappropriate
2 all responses semantically appropriate

15. SYNTACTIC STRUCTURE SOPHISTICATION

0 generally non-standard use of simple syntax, few elaborated structures attempted
1 few complex structures; many errors in simple syntax
2 uses few complex structures, few errors in simple syntax
3 uses some complex structures (and modals), makes few errors in simple syntax
4 native like use of syntactic structures

16. USE OF SOCIOLINGUISTICALLY APPROPRIATE FORM/ STRUCTURE

0 many disjointed sentences and/or single subordinate clauses; few, if any, well-formed declarative sentences
1 some disjointed sentences and/or single subordinate clauses; excessive use of "filler" words and connectors; a few well-formed declarative sentences
2 no disjointed sentences, some single subordinate clauses; occasional use of "filler" words and/or unnecessary connectors. Some well-formed declarative sentences
3 prevalence of well-formed declarative sentences; some appropriate single subordinate clauses; few, if any, "filler" words and unnecessary connectors

17. GRAMMATICAL COHESION - CONTINUITY OF VERB TENSE

0 general discontinuity of verb tense, mixes verb tense indiscriminately
1 occasional use of inappropriate verb tense
2 maintains continuity of verb tense but inappropriate for discourse genre
3 maintains continuity of verb tense; appropriate for discourse genre

18. GRAMMATICAL COHESION - REFERENCE

0 no proper antecedents given for any anaphoric pronouns
1 inconsistent use of proper antecedents and anaphoric pronouns
2 consistent use of proper antecedents and anaphoric pronouns

19. USE OF TRANSITION EXPRESSIONS

0 no attempt to use logical and structural connectors
1 some attempt at use of logical and/or structural connectors
2 uses logical and structural connectors adequately

20. COHERENCE - RELEVANCE OF IDEAS

0 many utterances are irrelevant to the text
1 few utterances are irrelevant to the text
2 all utterances are relevant to the text

21. COHERENCE - CONSISTENCY OF IDEAS WITHIN

0 more than one "bit" of information given is inconsistent within the text
1 one bit of information given is inconsistent within the text
2 all information given is consistent within the text

22. COHERENCE - ORGANIZATION OF IDEAS

0 elements of the passage are given in random order; little evidence of knowledge of the discourse structure
1 some elements of the passage are given in logical order, some evidence of knowledge of the discourse structure
2 elements of the passsage given are in logical order. Evidence of knowledge of the discourse structure is apparent

23. AWARENESS OF AUDIENCE - SIGNAL OF "PERFORMANCE"

0 no use of "special" voice or signal that a "performance" is about to begin
1 uses "special" voice and/or signals audibly that a "performance" is about to begin (e.g., clears throat, uses stock phrases, such as OK, allright, followed by a pause)

24. EXPLICITNESS - PRECISE USE OF VOCABULARY

0 vocabulary limited essentially to generalized terms; few adjectivals
1 little use of specific vocabulary, 1-2 words; some adjectivals
2 use of specific vocabulary, more than two words; several adjectivals

25. ELABORATION - PROVIDES DETAIL

0 provides little detail
1 provides some detail
2 provides much detail

Appendix B

Parent Interview, Student Interview and Teacher Interview

August 1981

SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY

PARENT QUESTIONNAIRE/ENGLISH VERSION

INTERVIEWER ____________________ NAME OF TS ____________________

INTERVIEW DATE ____________________ TIME OF INTERVIEW ______________

PART I: TELEPHONE CALL OR HOME VISIT TO DETERMINE THE LANGUAGE OF THE POTENTIAL TARGET STUDENT

Hello, I am ______________ (your name). I am working with __________________ (name of school).

First, let me ask you if you have received a letter from

____________________ telling you about the study and indicating

that I would be calling you?

IF YES, CONTINUE BY SAYING SOMETHING LIKE

..."if you have a few minutes," "if it's convenient," etc., I would like to ask you a few questions.

IF HESITANT, ASK IF YOU CAN CALL BACK AT A LATER DATE. MAKE SURE YOU SET A DATE AND TIME.

IF YES, ASK QUESTIONS 1, 2, and 9-16. Terminate interview; say: Thank you very much. You've been very helpful. If your child is selected for the second part of the study we will be calling you again.

WHEN YOU COMPLETE THE TELEPHONE CALL OR HOME VISIT, CHECK ONE OF THE FOLLOWING.

Parent Interview scheduled (by phone): Time _______ Date _______

Parent Interview completed (by phone): ____________________

Parent Interview scheduled (home visit): Time _______ Date _______

Parent Interview completed (home visit): ____________________

Parent could not be contacted: ________________

Parent refused to grant interview: ________________

PART II

FAMILY INFORMATION

1. How long have you lived in ______________________________?

   ______ 1. less than 1 year
   ______ 2. 1 to 2 years
   ______ 3. 3 to 5 years
   ______ 4. 5 or more years

2. Was ______________________________ enrolled at ____________________ last year?
   (TS name) (school)

3. Besides ________________________, do you have any other children?
   (TS name)
   Yes _______ No ________

IF YES, SAY:

4. What are their names?

	Name	Grade	Age
Sibling 1.			
Sibling 2.			
Sibling 3.			
Sibling 4.			
Sibling 5.			
Sibling 6.			
Sibling 7.			
Target Student			

NOW ASK FOR CHILDREN'S AGES. SAY:

5. How old is ____________________? And what grade is he/she in (1981-82)?

IF CHILD IS NOT IN SCHOOL, WRITE "NOT IN SCHOOL" UNDER GRADE COLUMN

6. Were there other family members living in the home before ______________ went to school? Yes _____ No _____
(TS)

IF YES, ASK:

How were they related to ____________________? **LIST:**
(TS)

1. ______________ 3. ______________ 5. ______________

2. ______________ 4. ______________ 6. ______________

7. Oh, how about you? How many years of school did you complete? _______

IF HESITANT, SAY:

"Well, let's go on to the next question."

8. How about your husband/wife? How many years of school did he/she complete? ______________

IF HESITANT, SAY:

"Well, let's go on to the next question."

PART IIA. LINGUISTIC INTERACTIONS

PRE-SCHOOL LANGUAGE USAGE

SAY: "Let's get back to the time before your child went to school."

9. Where were you living approximately two years before ______________ entered school? ______________________________
(TS)
(city, state, country)

a) In which neighborhood? ______________________________

Comment: ______________________________

____

____

10. What languages were spoken at home?

IF THE ANSWER IS BOTH ENGLISH AND NATIVE, THEN GO TO Q.10b

English

a. Was ____________ spoken at
NL
home?

No ______ Yes ______
Go to Q.11

b. How much of the time would you say __________ was spoken
NL
in the home? (Check the following:)

IF HESITANT, PROMPT BY SAYING: "WOULD YOU SAY" (READ LIST BELOW)

_____Most of the time
_____Equal in both
_____Very little of the time

Native

a. Was English spoken at home?

No _____ Yes _____
Go to Q.11

b. How much of the time would you say English was spoken in the home? (Check the following:)

IF HESITANT, PROMPT BY SAYING: "WOULD YOU SAY" (READ LIST BELOW)

_____Most of the time
_____Equal in both
_____Very little of the time

11. Before ________________ went to school, which languages did he/she use
(TS)
with you?

ON Q11-34: IF ANSWER IS ENGLISH, OR BOTH ENGLISH AND NATIVE LANGUAGE, THEN ASK ABOUT ENGLISH IN THE FOLLOWING QUESTION. IF THE ANSWER IS NATIVE LANGUAGE, THEN ASK ABOUT NATIVE LANGUAGE IN THE NEXT QUESTION.

How much of the time would you say ______________ used
(TS)
_____________ with you?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

IF HESITANT, PROMPT BY SAYING: "WOULD YOU SAY HE/SHE USED ________" (READ LIST ABOVE)

12. How about you, which languages did you use with ________________?
(TS)

How much of the time would you say _______________ used
(TS)
_______________ with you?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

13. Before ____________ went to school, which languages did he/she use with
TS
his/her father/mother?

How much of the time
would you say ____________
TS
used ____________ with
his/her father/mother?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

14. How about her/his mother/father, what languages did she/he use with ____________?
TS

How much of the time would
you say she/he used ____________
with ____________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

15. Before ____________ went to school, which languages did she/he use with
TS
her/his brothers and sisters?

How much of the time would you
say ____________ used
TS
____________ with brothers/sisters?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

16. How about her/his brothers/sisters, which languages did they use with ____________?
TS

How much of the time would
you say they used ____________
with ____________ ?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

17. Before ____________ went to school, which languages did she/he use with
TS
her/his friends?

How much of the time would
you say ____________ used
TS
____________ with her/his friends?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

18. How about her/his friends? Which language did they use with __________?
TS

How much of the time would you say they used __________ with __________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

GO TO Q 23, PART II-B, IF THERE WERE NO GRANDPARENTS OR OTHERS LIVING AT HOME.

19. Before __________ went to school, which languages did she/he use with
TS
her/his grandparents?

How much of the time would you say __________ used __________
TS
with her/his grandparents?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

20. How about her/his grandparents, which languages did they use with __________?
TS

How much of the time would you say they used __________ with __________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

21. Before __________ went to school, which language did he/she use with
TS
__________________________?
(Other from Q#6)

How much of the time would you say __________ used
TS
__________ with __________?
(Other from Q6)

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

22. How about __________, which languages did he/she use with __________?
(Other from Q6) TS

How much of the time would you say he/she used
__________ with __________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

PART IIB. LINGUISTIC INTERACTIONS

CURRENT LANGUAGE USAGE

SAY: "NOW LET'S TALK ABOUT THE LANGUAGES __________ USES NOW."
TS

23. Which languages does __________ use with you NOW?
TS

How much of the time would
you say __________ uses
TS
__________ with you?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

24. How about you?

How much of the time would
you say you use

__________ with __________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

25. Which languages does __________ use with his/her father/mother NOW?
TS

How much of the time would
you say __________ uses
TS
__________ with his/her father/
mother now?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

26. Which languages does father/mother use with __________ NOW?
TS

How much of the time would
you say he/she uses

__________ with __________ NOW?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

27. Which languages does __________
TS
use with her/his sisters/brothers
NOW?

How much of the time would you say
__________ uses __________ with them?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

28. How about them? Which languages do they use with __________ NOW?
TS

How much of the time would you say
they use __________ with __________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

29. Which languages does __________ use with her/his friends NOW?
TS

How much of the time would you say
__________ uses __________ with
TS
them?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

30. How about her/his friends? What languages do they use with __________ NOW?
TS

How much of the time would you say
they use __________ with __________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

IF THERE ARE NO GRANDPARENTS OR OTHERS LIVING AT HOME, GO TO Q-35.

31. Which languages does __________ use with her/his grandparents NOW?
TS

How much of the time would you say
__________ uses __________
TS
with them now?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

32. Which languages do her/his grandparents use with __________ NOW?
TS

How much of the time would you
say they use __________ with
__________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

33. Which languages does __________ use with __________ NOW?
TS Other

How much of the time would you say __________ uses
TS
__________ with him/her?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

34. How about him/her? Which languages does he/she use with __________ NOW?
TS

How much of the time would you say he/she uses __________ with __________?
TS

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

PRE-SCHOOL ACADEMIC ABILITY

35. Before your child went to school, could he/she do some things which are usually taught in school? _______Yes _______No

IF HESITANT, ASK: ~~"DO YOU RECALL IF HE/SHE COULD~~ ___ ___ ___?"
READ FROM LIST ON Q. 36

IF YES, ASK:

36. What were some of those things he/she could do?

PLACE A CHECKMARK (✓) BY ANSWERS RESPONDENT GIVES IF THEY ARE ON THE LIST WHICH FOLLOWS. IF THEY DO NOT APPEAR ON THE LIST, LIST THEM IN THE SPACE PROVIDED. IF PARENT DOES NOT RESPOND SPONTANEOUSLY TO Q-36, MENTION THE ITEMS LISTED AND CHECK (✓) EACH ITEM UNDER PROBE COLUMN.

PROBE	SUBJECT	( )	LANGUAGE	PERSON WHO TAUGHT STUDENT
___	Count	___	__E __N	Moth Fath Unc/Aunt Gparent Sib O
___	Say ABCs	___	__E __N	Moth Fath Unc/Aunt Gparent Sib O
___	Read	___	__E __N	Moth Fath Unc/Aunt Gparent Sib O
___	Write	___	__E __N	Moth Fath Unc/Aunt Gparent Sib O
___	Draw Pictures	___		Moth Fath Unc/Aunt Gparent Sib O
___	Make Rhymes	___	__E __N	Moth Fath Unc/Aunt Gparent Sib O
___	Sing Songs	___	__E __N	Moth Fath Unc/Aunt Gparent Sib O
___	Color	___		Moth Fath Unc/Aunt Gparent Sib O
	(List Other:) ___________		__E __N	Moth Fath Unc/Aunt Gparent Sib O
	___________		__E __N	Moth Fath Unc/Aunt Gparent Sib O
	___________		__E __N	Moth Fath Unc/Aunt Gparent Sib O
	___________		__E __N	Moth Fath Unc/Aunt Gparent Sib O
	___________		__E __N	Moth Fath Unc/Aunt Gparent Sib O

37. In what language(s) did ___________ learn to count? **CHECK AND CONTINUE BY SAYING**
TS

38. Do you recall who taught him to count? **REPEAT QUESTIONS FOR EACH ITEM ON LIST**

PART III. PRE-SCHOOL LINGUISTIC ENVIRONMENT (PAST USE)

39. At home, before your child went to school did he/she watch television?

_______Yes _______No
↳Go to Q-40.

IF YES, ASK:

a) What languages were spoken on those television programs __________ watched? E_____ N_____
TS

b) How much of the time would you say ______________ watched television programs in English?
TS

_____ All of the time
_____ Most of the time
_____ Equal in both
_____ Very little of the time
_____ Never

40. At home, before your child went to school did he/she listen to radio programs?

_____Yes _____No
↳ Go to Q-41

IF YES, ASK:

a) In what languages were those radio programs ____________ listened to?
TS

E _____ N _____

b) How much of the time would you say ______________ listened to the radio in English?
TS

_____ All of the time
_____ Most of the time
_____ Equal in both
_____ Very little of the time
_____ Never

41. At home, before your child went to school, did you receive any newspaper(s)?

_____Yes _____No
↳ Go to Q-42

IF YES, ASK:

a) How often were the newspapers delivered?
____Once a day
____Once a week
____Once a month
____Twice a month

b) What languages were the newspapers written in?

_____ All in English
_____ Mostly in English
_____ Equal in both
_____ Very little English
_____ None in English

c) Who read the newspapers?
mother _____
father _____
siblings _____
grandparents _____
other _____

42. At home, before your child went to school, did you subscribe to any magazines?

_____Yes _____No
↳ Go to Q-43

IF YES, ASK:

a) About how many did you subscribe to? _____

b) What languages were the magazines written in?
_____All in English
_____Mostly in English
_____Equal in both
_____Very little English
_____None in English

c) Who read the magazines? mother _____ father _____ siblings ____ grandparents ____ other ____

43. How about books? Were there books in the home? ____Yes ____No
→Go to Q-44

IF YES, ASK:

a) What types of books did you have around the house?
____ religious
____ children's
____ movies
____ encyclopedias
____ reference (dictionary, atlas)
____ other

b) What language(s) were the books written in?
_____All in English
_____Mostly in English
_____Equal in both
_____Very little English
_____None in English

c) Who read the books? mother ____ father ____ siblings ____ grandparents ____ other ____

PART IIIB. HOME LINGUISTIC ENVIRONMENT CURRENT USAGE

44. Does your child watch television now? ____Yes ____No
→Go to Q-45

IF YES, ASK:

a) How much of the time would you say ______________ (TS) watches television in English?

E	N	
__	__	All of the time
__	__	Most of the time
__	__	Equal in both
__	__	Very little of the time
__	__	Never

45. At home, does she/he listen to radio programs? ____Yes ____No
→Go to Q-46

IF YES, ASK:

a) How much of the time would you say __________ listens to the radio in English?
TS

- ____ All of the time
- ____ Most of the time
- ____ Equal in both
- ____ Very little of the time
- ____ Never

46. Do you receive the newspaper? ____Yes ____No
→Go to Q-47

a) How often do you get the newspaper? ____Once a day ____Once a week ____Once a month ____Twice a month

b) What languages are the newspapers written in?

- ____ All in English
- ____ Mostly in English
- ____ Equal in both
- ____ Very little English
- ____ None in English

c) Who reads the newspapers? mother ____ father ____ siblings ____ grandparents ____ other ____

PART IVA. NEIGHBORHOOD LINGUISTIC ENVIRONMENT PRESCHOOL

SAY:

"Let's get back to the past."

47. Before your child went to school, what language(s) were used in your immediate neighborhood?

IF THE ANSWER IS BOTH ENGLISH AND NATIVE, THEN GO TO Q47-b

____
English

a) Was __________ spoken in the neighborhood?
NL

No ____ Yes ____
Go to Q48

b) How much of the time would you say __________ was spoken in the neighborhood?
NL

(Check the following:)

- ____Most of the time
- ____Equal in both
- ____Very little of the time

____
Native

a) Was English spoken in the neighborhood?

No ____ Yes ____
Go to Q48

b) How much of the time would you say English was spoken in the neighborhood?

(Check the following:)

- ____Most of the time
- ____Equal in both
- ____Very little of the time

48. Before your child went to school, what languages were used in the local businesses (i.e., bakery, store)?

How much of the time would you say that ________ was used?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

49. Before your child went to school, what languages were used in churches in the neighborhood?

How much of the time would you say that ________ was used?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

50. What languages were used in various social gatherings (i.e., weddings, birthdays, parties, etc.)?

How much of the time would you say that ________ was used?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

PART IVB. CURRENT NEIGHBORHOOD LINGUISTIC ENVIRONMENT

SAY:

We are just about through. I am going to ask you some questions about what language is used in the immediate neighborhood.

51. What languages are spoken in the neighborhood now?

IF THE ANSWER IS BOTH ENGLISH AND NATIVE, THEN GO TO Q51-b

English

a) Is _____ spoken in the neighborhood?
NL

No _______ Yes _______
→Go to Q52

b) How much of the time would you say _____ is spoken in the neighborhood?
NL

(CHECK THE FOLLOWING:)

___Most of the time
___Equal in both
___Very little of the time

Native

a) Is English spoken in the neighborhood?

No _______ Yes _______
Go to Q-52

b) How much of the time would you say English is spoken in the neighborhood?

(CHECK THE FOLLOWING:)

___Most of the time
___Equal in both
___Very little of the time

52. What languages are spoken in the local businesses now?

How much of the time would you say that ____________ is used?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

53. What languages are spoken in churches around the neighborhood now?

How much of the time would you say that ____________ is used?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

54. What languages are used in social gatherings (parties, weddings...) now?

How much of the time would you say that ____________ is used?

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never

PART IV-C. PARENT EXPECTATIONS AND ATTITUDES

55. As parents, what are the most important things you would like to see your child learn in school?

LIST

Academic Subjects	Attitudes/Social Behaviors
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

ASK Q-56 ONLY IF ACADEMIC SUBJECTS WERE MENTIONED.

56. In what languages would you like for your child to learn the items you mentioned? _______English _______Native

IF PARENT(S) DOES NOT RESPOND TO Q-55, THEN SAY, "HOW ABOUT..." (AND READ THE FOLLOWING LIST):

			E	N
a.	Speaking	___	___	___
b.	Reading	___	___	___
c.	Writing	___	___	___
d.	Math	___	___	___
e.	Social Studies	___	___	___
f.	Music/Art	___	___	___

In what languages would you like your child to learn these subjects?

SAY

57. I have just one last question. Is there anything else you would like to say about the languages you and your children use at home?

COMMENTS:

SAY

Thank you very much for your time and information. I am sure it will help us learn more about language learning.

TERMINATE INTERVIEW

Southwest Educational Development Laboratory

STUDENT INTERVIEW/ENGLISH VERSION

Grade 4

Name of Target Student ____________________ School ____________________

Homeroom Teacher ____________________ Grade __________

Interview Date ____________________ Interviewer ____________________

INTERVIEWER INSTRUCTIONS ARE IN CAPITAL LETTERS. DO NOT READ THESE INSTRUCTIONS TO THE STUDENT.

I. INTRODUCTION

AT THE BEGINNING OF THE INTERVIEW IT IS ESSENTIAL THAT THE INTERVIEWER PUT THE STUDENT AT EASE. THIS WILL BE DONE BY CONVERSING WITH HIM/HER ABOUT ANYTHING WHICH SEEMS APPROPRIATE AT THE TIME. IT IS ALSO ESSENTIAL THAT THE INTERVIEWER ESTABLISH VERY EARLY INTO THE INTERVIEW THE LANGUAGE WHICH THE STUDENT FEELS MOST COMFORTABLE IN. THIS IS TO BE DONE BY ASKING HIM/HER WHICH LANGUAGE HE/SHE PREFERS AFTER ONE OR TWO SHORT INTRODUCTORY QUESTIONS. SUGGESTED INTRODUCTIONS ARE PRESENTED ON P. 2 (OVER).

I. INTRODUCTION

"Hi! I'm ______________________. What's your name?"

"How old are you?"

"Where do you live?"

THE FOLLOWING QUESTION ON LANGUAGE PREFERENCE MUST BE ASKED AND THE RESPONSE MUST BE RECORDED. THE INTERVIEWER SHOULD THEN PROCEED IN THE PREFERRED LANGUAGE.

"Which language do you prefer to speak?" E N No Preference

"How many brothers or sisters do you have?"

"Do you like to play (kickball, e.g.) ?"

THE INTERVIEWER SHOULD BEGIN WITH PART II AS SOON AS SHE SENSES THAT RAPPORT HAS BEEN ESTABLISHED WITH THE STUDENT OR THAT THE STUDENT IS BEGINNING TO FEEL COMFORTABLE WITH HER.

II. EDUCATIONAL HISTORY

THE PURPOSE OF THIS SECTION IS TO LEARN AS MUCH ABOUT THE STUDENT'S PAST SCHOOLING AS POSSIBLE. THE FOCUS SHOULD BE ON LANGUAGE RELATED AREAS. THE INTERVIEWER SHOULD TRY TO OBTAIN THE INFORMATION LISTED UNDER EACH COLUMN BELOW. PROBE WHERE NECESSARY, BUT DO NOT LEAD THE STUDENT.

"I would like to learn as much as I can about your school. I want you to tell me some things that you can remember about school. Let's see how much you can remember— Can you tell me who your teachers were and what schools you were in?"

	Teachers/Schools		Teachers/Schools
Gr.K	______________________	Gr.3	______________________
Gr.1	______________________		______________________
Gr.2	______________________		______________________

"Now let's start with first grade. You said Ms./Mr. ______________________ was your teacher. Did you have any other teachers in first grade?"

Year/Grade ______________ Teacher(s) a) ______________ b) ________________
(as named above)

"Now tell me some of the things you remember about Ms./Mr. ______________'s class."

FILL IN THE INFORMATION GIVEN IN THE APPROPRIATE SPACES BELOW. INFORMATION ON READING IS PARTICULARLY IMPORTANT. DO NOT, HOWEVER, INSIST IF THE STUDENT DOES NOT REMEMBER OR IF HE/SHE IS UNWILLING TO TALK ABOUT IT. IF MORE THAN ONE TEACHER WAS MENTIONED, ASK ABOUT OTHER TEACHER'S CLASS AS WELL.

Subject	A 0	B	C 30	D	E 60	F	G 90	H	I 120	J	K 150	N/A	Groups	
Reading-E													Yes	No
Reading-N													Yes	No
ESL/Eng.													Yes	No
Native Lang.Dev.													Yes	No
Math-E														
Math-N														
Science-E														
Science-N														
Soc. Stud.-E														
Soc. Stud.-N														
Culture-E														
Culture-N														
Other (List)														
__________														
__________														

"What language(s) did Ms./Mr. ________________ use with you most of the time?

E N

"What language(s) did Ms./Mr. ________________ use with you most of the time?"

E N

Year/Grade ______________ Teacher(s) a) ______________ b) ________________
(as named above)

"Now tell me some of the things you remember about Ms./Mr. ____________'s class."

FILL IN THE INFORMATION GIVEN IN THE APPROPRIATE SPACES BELOW. INFORMATION ON READING IS PARTICULARLY IMPORTANT. DO NOT, HOWEVER, INSIST IF THE STUDENT DOES NOT REMEMBER OR IF HE/SHE IS UNWILLING TO TALK ABOUT IT. IF MORE THAN ONE TEACHER WAS MENTIONED, ASK ABOUT OTHER TEACHER'S CLASS AS WELL.

Subject	A	B	C	D	E	F	G	H	I	J	K	N/A	Groups	
	0		30		60		90		120		150			
Reading-E													Yes	No
Reading-N													Yes	No
ESL/Eng.													Yes	No
Native Lang.Dev.													Yes	No
Math-E														
Math-N														
Science-E														
Science-N														
Soc. Stud.-E														
Soc. Stud.-N														
Culture-E														
Culture-N														
Other (List)														
__________														
__________														

"What language(s) did Ms./Mr. ________________ use with you most of the time?

E N

"What language(s) did Ms./Mr. ________________ use with you most of the time?"

E N

Year/Grade ______________ Teacher(s) a) ______________ b) ________________
(as named above)

"Now tell me some of the things you remember about Ms./Mr. ______________'s class."

FILL IN THE INFORMATION GIVEN IN THE APPROPRIATE SPACES BELOW. INFORMATION ON READING IS PARTICULARLY IMPORTANT. DO NOT, HOWEVER, INSIST IF THE STUDENT DOES NOT REMEMBER OR IF HE/SHE IS UNWILLING TO TALK ABOUT IT. IF MORE THAN ONE TEACHER WAS MENTIONED, ASK ABOUT OTHER TEACHER'S CLASS AS WELL.

Subject	A	B	C	D	E	F	G	H	I	J	K	N/A	Groups	
	0		30		60		90		120		150			
Reading-E													Yes	No
Reading-N													Yes	No
ESL/Eng.													Yes	No
Native Lang.Dev.													Yes	No
Math-E														
Math-N														
Science-E														
Science-N														
Soc. Stud.-E														
Soc. Stud.-N														
Culture-E														
Culture-N														
Other (List)														
__________														
__________														

"What language(s) did Ms./Mr. __________________ use with you most of the time?

E N

"What language(s) did Ms./Mr. __________________ use with you most of the time?"

E N

Year/Grade ______________ Teacher(s) a) ______________ b) ________________
(as named above)

"Now tell me some of the things you remember about Ms./Mr. _____________'s class."

FILL IN THE INFORMATION GIVEN IN THE APPROPRIATE SPACES BELOW. INFORMATION ON READING IS PARTICULARLY IMPORTANT. DO NOT, HOWEVER, INSIST IF THE STUDENT DOES NOT REMEMBER OR IF HE/SHE IS UNWILLING TO TALK ABOUT IT. IF MORE THAN ONE TEACHER WAS MENTIONED, ASK ABOUT OTHER TEACHER'S CLASS AS WELL.

Subject	A 0	B	C 30	D	E 60	F	G 90	H	I 120	J	K 150	N/A	Groups	
Reading-E													Yes	No
Reading-N													Yes	No
ESL/Eng.													Yes	No
Native Lang.Dev.													Yes	No
Math-E														
Math-N														
Science-E														
Science-N														
Soc. Stud.-E														
Soc. Stud.-N														
Culture-E														
Culture-N														
Other (List)														
__________														
__________														

"What language(s) did Ms./Mr. ________________ use with you most of the time?

E N

"What language(s) did Ms./Mr. ________________ use with you most of the time?"

E N

III. CURRENT INSTRUCTIONAL PROGRAM

THE PURPOSE OF THIS SECTION IS TO ELICIT A LANGUAGE SAMPLE FROM THE CHILD IN ENGLISH. THE INTERVIEWER SHOULD ASK THE STUDENT TO SPEAK IN ENGLISH ABOUT HIS/HER CURRENT PROGRAM.

"Let's talk about your present grade level. What can you tell me about your class this year? Tell me in English."

Year/Grade ________________ Teacher(s) a)______________ b) ________________

(as named above)

Subject	A	B	C	D	E	F	G	H	I	J	K	N/A	Groups	
	0		30		60		90		120		150			
Reading-E													Yes	No
Reading-N													Yes	No
ESL/Eng.													Yes	No
Native Lang.Dev.													Yes	No
Math-E														
Math-N														
Science-E														
Science-N														
Soc. Stud.-E														
Soc. Stud.-N														
Culture-E														
Culture-N														
Other (List)														
___________														
___________														

"What language(s) does Ms./Mr. ________________ use with you most of the time?

E N

"What language(s) does Ms./Mr. ________________ use with you most of the time?"

E N

IV. LANGUAGE RESOURCES

THE PURPOSE OF THIS SECTION IS TO TRY TO DETERMINE WHICH LANGUAGE(S) THE STUDENT SPOKE ON ENTRY INTO SCHOOL AND WHICH LANGUAGE(S) HE/SHE SPEAKS NOW.

1. Which language(s) did you speak before you came to school? E N

How much of the time would you say you used ________________? (lang. mentioned above Q-1)

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never
___	___	D/K

2. Which language(s) do you speak now? E N

How much of the time would you say you use ____________________? (lang. mentioned above Q-2)

E	N	
___	___	All of the time
___	___	Most of the time
___	___	Equal in both
___	___	Very little of the time
___	___	Never
___	___	D/K

V. INTERVIEWER'S COMMENTS

INTERVIEW CONDUCTED IN: E N

TEACHER INTERVIEW
Areas of Discussion

Language

Resources
Use

Academic Performance

Language
ESL
Content

Instructional Prog.

Reading
  - language
  - grouping
  - time blocks

Use of Native Language

Social Behavior

Peer-Peer
Peer-Adult

Physical Health

Appearance
General Health

Parent Involvement

Frequency of contact
For what purpose

TEACHER INTERVIEW

Teacher ______________________ Grade/Year ________________

TS __________________________ School __________________

I. LANGUAGE

Rating of TS's oral language (global)

ME
ED
BIL
ND
MN
Can't Evaluate

II. INSTRUCTIONAL PROGRAM

	A	B	C	D	E	F	G	H	I	J	K	N/A	
Daily:	0		30		60		90		120		150		Groups
Reading-E													Yes No
Reading-N													Yes No
ESL/Eng													Yes No
Nat. Lang. Dev.													Yes No
Math-E													
Math-N													
Science-E													
Science-N													
Soc. Stud-E													
Soc. Stud-N													
Culture-E													
Culture-N													
Other (List)													
____________													
____________													

Comments: ____

____

____

____

III. ACADEMIC PERFORMANCE

	Excellent	Above Average	Average	Below Average	Poor	Can't Evaluate
Overall						
Reading-E						
Reading-N						
ESL/Eng						
Content Areas						

IV. SOCIAL BEHAVIOR

Gets along well with classmates.	Yes	No	Sometimes	D/K
Discipline problems in class?	Yes	No	Sometimes	D/K
Works Independently?	Yes	No	Sometimes	D/K
Volunteers Answers? (Raises hand)	Yes	No	Sometimes	D/K

Comments: ______________________________

____

____

V. PHYSICAL APPEARANCE/HEALTH

Generally healthy appearance? Yes No D/K

Negative physical characteristics? Yes No D/K

Absence due to illness? Frequently Sometimes Seldom Never D/K

Comments: ______________________________

____

____

VI. PARENT INVOLVEMENT

Contact with parent(s): Frequently Sometimes Seldom Never D/K

Reason for contact: Discipline Academic Achievement Never

Who initiates contact? Teacher Parent(s)

Comments: ______________________________

____

____